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CONTINUOUSLY UPDATED DATA PROCESSING SYSTEM AND METHOD FOR MEASURING AND REPORTING ON VALUE CREATION PERFORMANCE

TECHNICAL FIELD

The present invention relates to a data processing system that measures performance in creating and realizing value by a business enterprise based on past and anticipated future events. In one aspect the present invention relates to a data processing system that provides continuously updated measurements of the present value of future financial value streams of a business enterprise derived from event-driven discounted cash flow analysis. In another aspect the present invention relates to a data processing system and method that provides continuously updated data regarding financial value creation and realization in a business enterprise derived from event-based analysis and continuously measures and reports on value creation and value realization in a business enterprise derived from event-based analysis, and supports selection by a stakeholder-user of real-time outcome displays in multiple formats. In another aspect the present invention relates to a data processing system and method that supports the provision of a real time assurance report by a third party on user-selectable real time outcome displays in multiple formats. In another aspect the present invention relates to a data processing system and method that supports benchmarking through a network of benchmarking service providers.

BACKGROUND ART

A fundamental principle of traditional accounting and financial reporting methods is that the performance of a business enterprise is derived from transactions between the enterprise and other parties, such as customers, suppliers and employees. Consequently, traditional accounting can be characterized as measuring value realized through such transactions. Traditional accounting systems can thus be characterized as transaction-based.

This arrangement proved to be satisfactory through what can be characterized as the manufacturing era. In today's world, however, the most important assets of many enterprises are not plant and equipment but rather knowledge, ideas, and skills. For the most part, knowledge-based assets are not acquired through third-party transactions, but are rather developed in-house. As such, they are not adequately captured by traditional accounting methods.

As a result of these shortcomings of traditional accounting with respect to knowledge intensive companies, it is apparent that capital markets are missing important information needed to rationally assess the performance of a business enterprise. It has been argued that traditional accounting methods are a declining predictor of stock prices and produce largely irrelevant reports for companies with long research and development pipelines. Without adequate accounting for knowledge-intensive enterprises, capital markets will perform sub-optimal resource allocation.

Many recent developments have taken place in the field of accounting and financial reporting though none fully addresses these problems. These include: Economic Value Added (EVA); Balanced Scorecard, Intellectual Capital Management (ICM), Economic Resource Planning (ERP); and the Global Reporting Initiative (GRI). An attempt has been made to mitigate some of traditional accounting's shortcomings with management's discussion and analysis (MD&A) sections in annual reports, but MD&A disclosure is itself in bad condition, with no clear standards, methodology, or reporting principles. Capital markets are not routinely supplied with information that would permit monitoring of strategy implementation, value creation, and risk management.

Thus, with the increased time-lag often found between value creation and value realization, an accounting model that focuses only on the latter is increasingly irrelevant for intensively knowledge-based enterprises – and, indeed, enterprises in general are increasingly knowledge-based. Traditional financial statements have simply not provided sufficient information about knowledge assets.

When value creation was closely followed by value realization (the mouse trap was manufactured in March and sold in April) concentrating on just value realization alone was good enough. It is no longer good enough today. A bio-pharmaceutical research company may spend research and development funds on a potential drug discovery for ten years before successful commercialization and revenue streams commence. The growing deficits resulting from research and development write-offs displayed by traditional accounting during those ten years do not convey timely and relevant information. It is not that traditional accounting methods focussed on value realization should be abandoned. They are important, but they are not sufficient.

An additional drawback to traditional transaction-based accounting techniques is that they tend to rely on summarization of transactional data on a monthly, quarterly, or annual basis in order to provide periodic financial statements and reports. However, what is needed in today's fast-

paced environment is a method of providing continuously updated information on value creation and realization.

An additional drawback to traditional accounting techniques is that they tend to capture only one dimension of value: namely, financial value. However, financial value is not the only dimension of value that is relevant to understanding enterprise performance. For example, non-financial factors, such as avoiding harm to the natural environment, or contributing to a healthier community, may not yield direct financial benefits to the enterprise in the short-run, but may be as important in strategic terms as increasing the financial returns to shareholders.

A further drawback to traditional accounting techniques is that they tend to measure performance from the perspective of only one stakeholder: that is, shareholders. However, in the modern economy, achieving a full understanding of enterprise performance requires knowledge of the extent to which the enterprise is meeting the expectations of other stakeholders, such as customers, employees, suppliers, business partners, and the communities and society within which the enterprise operates.

Therefore, what is needed, by contrast to conventional techniques, is a technique for providing value creation information for a business enterprise from the perspectives of a variety of stakeholders, not just shareholders. What is further needed is a method of providing an integrated perspective on both financial and non-financial value creation. What is also needed is a technique for providing measurements of the performance of a business enterprise in creating value based upon projections of future events and related benefits that result from such events.

In addition, there is a need for a technique for providing continuously updated measurements of the performance of a business enterprise in creating and realizing value based on past and future events, and related benefits that will result from such events.

Such an event-based system should be organized on fundamentally different principles than today's transaction-based accounting systems. This creates the prospect that an enterprise that wishes to track value creation performance, as well as traditional value realization performance, would need to maintain two entirely different systems: an event-based value creation performance measurement and reporting system, and a transaction-based value realization accounting system. Maintaining two separate systems can be inefficient and costly.

Thus, a method of adapting a continuously updated event-based system so that it is capable of producing traditional accounting reports and financial statements, in addition to measuring and reporting on value creation performance is needed.

Another drawback of traditional accounting is that it provides a general purpose set of value realization financial statements for a particular period of time, in a single format, as specified by Generally Accepted Accounting Principles (GAAP). There is thus a need for a stakeholder-user to be able to select the attributes of a particular outcome display that is updated in real-time.

An important feature of traditional value realization accounting has been the development of standards and procedures that enable an independent third party auditor or independent internal auditor to provide assurance to users of financial statements. Provision of assurance in this way enhances the credibility of financial information, and is an important element in the proper functioning of capital markets.

Assurance has traditionally been provided in the form of a standardized audit report, whereby an assurance provider attests to the accuracy of financial or non-financial information based on evidence obtained through an audit conducted in accordance with generally-accepted auditing standards. In the past, it was not necessary to customize an assurance report to the needs of a particular user, since traditionally, audit reports were usually provided on financial statements prepared in a standardized format.

For information produced by a continuously updated data processing system for measuring and reporting on value creation and value realization to be of maximum utility to stakeholders, it is desirable to provide methods by which assurance can be provided by third party or independent internal auditors.

There are significant differences between a traditional financial accounting system and a continuously updated data processing system for measuring and reporting on value creation and value realization that have major implications for assurance providers. For example, it is desirable in a continuously updated data processing system for measuring and reporting on value creation and value realization that assurance procedures be automated so that they can be undertaken in real time, in parallel with the generation of the outcome displays on which assurance is being provided. It is also desirable that, where appropriate, stakeholder-users be able to specify the level of assurance they require, and that assurance reports be customized in order to be relevant to the particular outcome display to which they refer, taking into account the choices made by a stakeholder-user in selecting the attributes of a particular outcome

display. It is also desirable that certain real time automated procedures and the generation of an assurance report in real-time be performed independently by the third party assurance provider on a parallel system.

In providing continuously updated information on value creation performance, one of the needs of business enterprises is to benchmark their performance against other comparative companies. It is desirable to provide benchmarking information on value creation performance in real-time, in a manner that enables comparisons to be made with comparable firms, functions or data in a manner that protects the confidentiality of enterprise information.

It is to these and other ends that the present invention is directed.

DISCLOSURE OF THE INVENTION

In one aspect the present invention provides a data processing method that measures performance in creating value by a business enterprise based upon past and anticipated future events. The data processing method preferably provides continuously updated measurements of the present value of future financial value streams of the business enterprise derived from event-driven discounted cash flow analysis.

In contrast to conventional accounting techniques, the present invention provides measures of value creation performance that are not solely dependent upon the occurrence of transactions between the business enterprise and third parties. Rather, the present invention takes into account anticipated benefits from activities undertaken by the business enterprise. A system is provided by which strategic planning for the enterprise may be accomplished. In addition, past value creation performance of the enterprise may also be evaluated on an ongoing basis.

In accordance with an aspect of the present invention, data relating to the performance of a business enterprise in creating value is processed. A data structure is developed. The data structure includes one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable. A first present value of the future financial value stream of the business enterprise is determined by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money. In response to the occurrence or non-occurrence of one or more of the future events, a determination is made as to whether one or

more of the assumed variables have changed and whether the influenced future financial value stream has changed. A second present value of the future financial value stream is determined taking into account the one or more assumed variables that changed in response to the occurrence or non-occurrence of the one or more of the future events.

In accordance with another aspect of the invention, a data structure is developed. The data structure includes a plurality of future financial value streams, each future financial value stream having one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable. A present value of each future financial value stream is determined by aggregating the influences on the future financial value stream attributable to the assumed variables of each future financial value stream and adjusting the future financial value streams for a time value of money. The present value of each future financial value stream is aggregated, to form a first aggregate present financial value of the plurality of future financial values streams. In response to the occurrence or non-occurrence of one or more of the future events for one or more of the future financial value streams, a determination is made whether one or more of the assumed variables have changed and whether the influenced future financial value stream has changed. A second aggregate present value of the plurality of future financial value streams is formed taking into account the one or more assumed variables that changed in response to the occurrence or non-occurrence of the one or more of the future events.

In accordance with yet another aspect of the invention, a data structure is developed. The data structure includes one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable. A first present value of the future financial value stream the business enterprise is determined as of a first specified date by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money. A second present value of the future financial value stream of the business enterprise is determined as of a second specified date by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money. A variance between the first present value and the second present value is determined taking into account a time value of money between the first and second dates The

variance between the first present value and the second present value is attributed to events that occurred between the first and second specified dates.

In accordance with a further aspect of the invention, data relating to the performance of a business enterprise in creating value is processed. A stakeholder perspective is selected from among a plurality of stakeholder perspectives for determining a present value of a future financial value stream of the business enterprise. A data structure including one or more assumed variables that have an influence on the future financial value stream of the business enterprise is developed from the perspective of the selected stakeholder and at least one future or past event for each assumed variable that influences the corresponding assumed variable. A present value of the future financial value stream of the business enterprise is determined from the perspective of the selected stakeholder by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money.

In accordance with another aspect of the invention, a data structure is developed. The data structure includes one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable. Risks specific to the future financial value stream are identified and segregated from risks specific to the business enterprise or industry as a whole. Probabilities are assigned to the events or assumed variables based on the identified risks. A first present value of the future financial value stream for the business enterprise is determined by aggregating the influences on the future financial value stream attributable to the assumed variables, adjusting the future financial value stream by the assigned probabilities, and further adjusting the future financial value stream for a time value of money. In response to the occurrence or non-occurrence of one or more of the future events, a determination is made as to whether one or more of the assumed variables have changed and whether the influenced future financial value stream has changed. A second present value of the future financial value stream is determined taking into account the one or more assumed variables that changed in response to the occurrence or non-occurrence of the one or more of the future events.

In accordance with yet another aspect of the invention, a data structure is developed. The data structure includes one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable. A present value of the future

financial value stream of the business enterprise is determined by aggregating the influences one the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money. The events and assumed variables collectively form a base case scenario for the business enterprise. The first present value of the future financial value stream is based upon the base case scenario. One or more of the assumed variables is changed to form an alternate scenario including the changed assumed variables. The present value of the future financial value stream is determined based upon the alternate scenario. The present value of the future financial value stream based upon the alternate scenario is compared to the first present value of the future financial value stream based upon the base case scenario.

In accordance with a further aspect of the invention, data relating to the performance of a business enterprise in creating value is processed. A data structure is developed. The data structure includes one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable. A first present value of the future financial value stream for the business enterprise is determined by aggregating the influences on the future financial value attributable to the assumed variables and adjusting the future financial value for a time value of money. A series of updated present values of the future financial value stream are repeatedly determined and presented. Each updated present value is determined from the events and assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more of the future events.

The first present value may be determined by adjusting the future financial value stream by an assessed probability that the influences on the future financial value stream will be realized. In addition, the second present value may be determined by adjusting the future financial value stream by an assessed probability that the influences on the future financial value stream will be realized, taking into account an assessed probability that changed in response to the occurrence or non-occurrence of the one or more of the future events.

The future financial value stream may be associated with activities of the business enterprise necessary to give rise to the events associated with the future financial value stream. A present value of the future financial value stream may be determined by aggregating influences on the future financial value stream attributable to past events. In addition, a reliability index may be determined that is indicative of relative magnitudes of the present value of the future financial

value stream attributable to past events and the present value of the future financial value stream attributable to future events.

The events and assumed variables may collectively form a base case scenario for the business enterprise. The first present value of the future financial value stream may be based upon the base case scenario, in which case, the method may also include: changing one or more of the assumed variables, thereby forming an alternate scenario including the changed assumed variables; determining the present value of the future financial value stream based upon the alternate scenario; and comparing the present value of the future financial value stream based upon the alternate scenario to the first present value of the future financial value stream based upon the base case scenario.

A stakeholder perspective may be selected from among a plurality of stakeholder perspectives for determining the first and second present values of the future financial value stream. Two or more stakeholder perspectives may be selected from among a plurality of stakeholder perspectives for determining the first and second present values of the future financial value stream.

The first present value may be determined with respect to a first date. The second present value may be determined with respect to a second date. A variance between the first present value and the second present value may be determined taking into account the time value of money between the first and second dates. The variance between the first present value and the second present value may be attributed to events that occurred between the first and second dates.

In one aspect the invention affords a data processing system and method for assessing the performance of a business enterprise in creating and realizing value. In one aspect the invention affords a data processing system and method that uses continuously-updated event-based information to produce traditional accounting reports and financial statements in addition to measuring and reporting on value creation performance of a business enterprise. In another aspect the invention affords a data processing system and method that continuously measures and continuously reports on value creation and value realization in a business enterprise derived from event-based analysis, and supports selection by a stakeholder-user of real-time outcome displays in multiple formats. In another aspect the invention provides a data processing system and method for analysis of financial and non-financial value creation performance of a business enterprise. In another aspect the invention affords a data processing system and method that provides a comprehensive user interface for analysis of value creation performance of a business enterprise.

The system provides a stakeholder-user with up-to-the-minute value creation information regarding the business enterprise. Stakeholder-users may also review underlying assumptions, make alterations to the assumptions and see the results of value creation analysis based on those altered assumptions. In addition, stakeholder-users may contribute performance-related information reflecting their own experience with the enterprise for incorporation into the data regarding the value creation performance of the enterprise.

The system further provides reports (outcome displays) on value creation performance of the enterprise tailored for each of the key stakeholder groups of the enterprise.

The system addresses shortcomings of conventional financial accounting techniques by measuring and reporting future value streams, not just historical transactions, measuring and reporting value streams for all key stakeholders, including both financial and non-financial value; and measuring and reporting value creation on a continuous, real-time basis.

In shifting the focus from shareholders to a broader set of stakeholders, information may be obtained to evaluate value creation performance from the perspective of the stakeholder groups. The invention addresses this by providing two types of stakeholder interactivity. First, the system may provide an opportunity for stakeholders to input data regarding corporate performance as they have experienced it from a customer, employee, or other stakeholder perspective. Secondly, the stakeholders may interact with the system, thus enabling them to select the information that is most relevant to them.

In accordance with one aspect of the invention, a method of processing data relating to the performance of a business enterprise in creating value is provided in which a data structure is developed including assumed variables that have an influence on a value stream of the business enterprise. The assumed variables are arranged in a multi-level hierarchy in which assumed variables positioned at a lower level in the hierarchy influence one or more assumed variables positioned at a higher level in the hierarchy. A first outcome is determined for the financial value stream of the business enterprise based upon the assumed variables. A user is authorized to alter one or more of the assumed variables according to a level of the hierarchy in which the assumed variables are positioned. A second outcome for the value stream of the business enterprise is determined taking into account the altered assumed variables.

In accordance with another aspect of the invention, a method of processing data relating to the performance of a business enterprise in creating value is provided in which a data structure is developed including a plurality of assumed variables that have an influence on a value stream of the business enterprise. The data structure has a portion which defines a base case scenario

for the business enterprise An outcome is determined for the value stream of the business enterprise based upon the assumed variables of the base case scenario. Real-time feedback is provided by each of a plurality of users on the value creation performance of the business enterprise. The real-time feedback is stored in the data structure in association with an identifier of the user who provided each portion of the feedback. The assumed variables of the base case scenario are maintained unchanged by the plurality of users. Selected ones of the portions of the feedback and selected ones of the assumed variables of the base case scenario are aggregated. An outcome for the value stream of the business enterprise is determined based upon the selected ones of the portions of the feedback and the selected ones of the assumed variables of the base case scenario.

In accordance with another aspect of the invention, a method of processing data relating to the performance of a business enterprise in creating value is provided in whicha data structure is developed including a plurality of assumed variables that have an influence on a value stream of the business enterprise. The data structure has a portion which defines a base case scenario for the business enterprise. An outcome is determined for the value stream of the business enterprise based upon the assumed variables of the base case scenario. A plurality of users alter selected ones of the plurality of assumed variables. Each altered assumed variable is stored in the data structure in association with an identifier of the user who made the alteration. The assumed variables of the base case scenario are maintained unchanged by the plurality of users. Selected ones of the altered assumed variables and selected ones of the assumed variables of the base case scenario are aggregated in accordance with the stored identifiers to form one or more alternate scenarios. An outcome is determined for the value stream of the business enterprise based upon each of the alternate scenarios.

In yet another aspect of the invention, a system for processing data relating to the performance of a business enterprise in creating value is provided in which a memory device stores a data structure including assumed variables that have an influence on a value stream of the business enterprise. The assumed variables in said data structure are arranged in a multi-level hierarchy in which assumed variables positioned at a lower level in the hierarchy influence one or more assumed variables positioned at a higher level in the hierarchy. A user is authorized to alter one or more of the assumed variables according to a level of the hierarchy in which the assumed variables are positioned. A filter selects certain ones of the assumed variables and certain ones of the altered assumed variables. A calculation engine for receiving the certain ones of the assumed variables and the certain ones of the altered assumed variables from the filter and for

determining an outcome for the financial value stream of the business enterprise based upon the certain ones of the assumed variables and the certain ones of the altered assumed variables.

In accordance with a further aspect of the invention, a method of processing data relating to the performance of a business enterprise in creating value is provided in which a data structure is developed including a plurality of assumed variables that have an influence on a value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable. The data structure has a portion which defines a base case scenario for the business enterprise. An outcome is determined for the value stream of the business enterprise based upon the assumed variables and events of the base case scenario. Selected ones of the plurality of assumed variables and selected ones of the events are altered by a plurality of users. Each altered assumed variable and each altered event is stored in the data structure in association with an identifier of the user who made the alteration. The assumed variables and events of the base case scenario are maintained unchanged by the plurality of users. Selected ones of the altered assumed variables and events are aggregated along with selected ones of the assumed variables and events of the base case scenario in accordance with the stored identifiers to form one or more alternate scenarios. An outcome is determined for the value stream of the business enterprise based upon each of the alternate scenarios.

The assumed variables may be arranged in a multi-level hierarchy in which assumed variables positioned at a lower level in the hierarchy influence one or more assumed variables positioned at a higher level in the hierarchy. Each of the users may alter the assumed variables according to a level of the hierarchy in which the assumed variables are positioned. The outcome of the base case scenario may include a present financial value of the value stream or a non-financial metric.

In accordance with an aspect of the invention, a method of evaluating the value creation performance of a business enterprise is provided. A data structure is developed that includes financial and non-financial information relating to historical and future value creation performance of the business enterprise. An initial set of projected financial and non-financial value creation outcomes based on the information is presented. An alteration to the financial or non-financial information is made by a stakeholder-user. A second set of projected financial and non-financial value creation outcomes based on the alteration to the financial or non-financial information is then presented.

In accordance with another aspect of the invention, a method of evaluating the value creation performance of a business enterprise by a stakeholder-user is provided. A data structure is developed that includes financial and non-financial information relating to historical and future value creation performance of the business enterprise. The financial and non-financial information includes: (1) information relating to a value creation and realization formula for the business enterprise; (2) information relating to a value stream model for the business enterprise; (3) information relating to value creation capacity of the business enterprise; and (4) information relating to value creation for multiple stakeholders of the business enterprise. An initial set of projected financial and non-financial outcomes determined from the information is presented to the stakeholder-user.

In accordance with a further aspect of the invention, a method of evaluating the value creation performance of a business enterprise by a stakeholder-user is provided. A data structure is developed that includes financial and non-financial information relating to historical and future value creation performance of the business enterprise from the perspectives of each of a plurality of stakeholders. One or more of the stakeholder perspectives is selected from among a plurality of the stakeholder perspectives by the stakeholder-user. An initial set of projected financial and non-financial value creation outcomes is presented from the information. The outcomes presented are from the selected one or more of the stakeholder perspectives.

In accordance with yet another aspect of the invention, a method of evaluating the value creation performance of a business enterprise is provided. A data structure is developed that includes financial and non-financial information relating to historical and future value creation performance of the business enterprise from each of a plurality of stakeholder perspectives. Feedback is provided by a stakeholder-user on a real-time basis on the value creation performance of the business enterprise. A set of projected financial and non-financial value creation outcomes determined from the financial and non-financial information and from the feedback is then presented.

In accordance with a still further aspect of the invention, a method of evaluating the value creation performance of a business enterprise is provided. A data structure is developed that includes one or more assumed variables that have an influence on a future value stream of the business enterprise. The future value stream includes financial and non-financial elements, while the data structure includes at least one future or past event for each assumed variable which influences the corresponding assumed variable. Sets of projected financial and non-financial value creation outcomes are repeatedly presented. The outcomes are determined from

the events and assumed variables in the data structure including any assumed variable which has changed in response to the occurrence or non-occurrence of one or more of the future events.

In accordance with one aspect, the invention affords a method for generating an outcome display of data relating to the performance of a business enterprise in creating value. The method includes receiving one or more reporting options relating to display criteria for formatting the outcome display of data; selecting an event filter based on the received reporting options for filtering an event matrix in accordance with the reporting options and extracting information from the event matrix related to the received display criteria; selecting a calculation engine based on the received reporting options and generating the outcome display information, for example in electronic or paper form, from the extracted information from the event matrix using appropriate calculation formulae associated with the calculation engine; and presenting the resulting outcome display information.

Reporting options include generating a value creation outcome display, generating a value realization outcome display, and generating an alternative reporting outcome display. In generating a value creation outcome display, the method also includes receiving reporting parameters relating to the display criteria for formatting the outcome display of data, such as reporting view type, value stream reporting options, stakeholder perspective reporting options, reporting view format, reporting assumption options, and reporting detail options.

Reporting view type parameters include value creation/value realization formulae, value stream model, value creation capacity, and value creation for multiple stakeholders. Value stream reporting options include a single value stream, and an aggregated value stream. The aggregated value stream can be aggregated by technology specific parameters, geography specific parameters, and organizational unit specific parameters. Stakeholder perspective reporting options include customer perspective, employee perspective, supplier/business partner perspective, community/society perspective, and shareholder perspective. The reporting view format includes vision view and performance tracking view. Reporting assumption options include official event outcome assumptions, and changed event outcome assumptions. Reporting detail options include a range of reporting view details, where more specific outcome display information is presented depending on the level of reporting view details selected.

In generating a value realization outcome display, the method includes receiving reporting parameters relating to the display criteria for formatting the outcome display of data, such as reporting format type, organizational unit report options, accounting standard parameters,

reporting period parameters, and reporting detail options. Reporting format type includes financial statements, financial outcome displays, and shareholder value outcome displays. Accounting standard parameters include country specific accounting standards. Reporting period parameters include date information for constraining report criteria. Reporting detail options include a range of reporting view details, where more specific outcome display information is presented depending on the level of reporting view details selected.

In generating an alternative reporting outcome display, the method includes receiving reporting parameters relating to the display criteria for formatting the outcome display of data, such as reporting format type, organizational unit report options, and reporting detail options. Reporting format type includes a balanced scorecard report, a report in accordance with the guidelines of the global reporting initiative, a report in accordance with formats for reporting on intellectual capital, and a management discussion and analysis report. Reporting detail options include a range of reporting view details, where more specific outcome display information is presented depending on the level of reporting view details selected.

In another aspect, the invention provides a system for processing data relating to the performance of a business enterprise in creating value. The system includes a memory device for storing a data structure including a plurality of first assumed variables that have an influence on a non-financial value stream of the business enterprise and including a plurality of second assumed variables that have an influence on a financial value stream of the business enterprise. The system also includes a calculation engine for determining a first outcome of the non-financial value stream of the business enterprise based upon the first assumed variables. The first outcome influences at least one of the second assumed variables. The calculation also determines a first present value of the financial value stream of the business enterprise based upon the first outcome and based upon the second assumed variables. An outcome display module for selecting outcome display reporting parameters for generating outcome displays from information stored in the memory device is also provided. The outcome display reporting parameters are associated with certain ones of the first and second assumed variables stored in the memory device. A filter is coupled with the calculation engine for selecting those certain ones of the first and second assumed variables from the memory device to be delivered to the calculation engine. Reports can be generated electronically or in paper form.

A feature of the invention is that the first outcome includes a non-financial metric. Further, each of the first and second assumed variables is stored in the data structure in association with an identification of an originator of the corresponding assumed variable. The filter selects the

assumed variables to be delivered to the calculation engine according to the identifications stored in association with the assumed variables. The filter also selects a stakeholder perspective from among a plurality of stakeholder perspectives prior to providing first and second assumed variables to the calculation engine.

An additional feature of the invention is that the calculation engine repeatedly determines a series of updated outcomes of the non-financial value stream of the business enterprise and a series of updated present values of the financial value stream of the business enterprise based upon and assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more events.

The invention affords a data processing system and method for assessing the performance of a business enterprise in creating and realizing value. More particularly, the invention affords a data processing system and method that continuously measures and reports on value creation and value realization in a business enterprise derived from event-based analysis, and supports the provision of a real time assurance report by a third party on user-selectable real time outcome displays in multiple formats.

The invention also affords a data processing system and method for assessing the performance of a business enterprise in creating and realizing value. More particularly, the invention affords a data processing system and method that supports the provision of real-time benchmarking through a network of benchmarking service providers.

The system provides a stakeholder-user with up-to-the-minute value creation information regarding the business enterprise. Stakeholder-users may also review underlying assumptions, make alterations to the assumptions and see the results of value creation analysis based on those altered assumptions. In addition, stakeholder-users may contribute performance-related information reflecting their own experience with the enterprise for incorporation into the data regarding the value creation performance of the enterprise.

The system further provides reports (outcome displays) on value creation performance of the enterprise tailored for each of the key stakeholder groups of the enterprise

The system addresses shortcomings of conventional financial accounting techniques by measuring and reporting future value streams, not just historical transactions, measuring and reporting value streams for all key stakeholders, including both financial and non-financial value; and measuring and reporting value creation on a continuous, real-time basis.

In shifting the focus from shareholders to a broader set of stakeholders, information may be obtained to evaluate value creation performance from the perspective of the stakeholder groups. The invention addresses this by providing two types of stakeholder interactivity. First, the system may provide an opportunity for stakeholders to input data regarding corporate performance as they have experienced it from a customer, employee, or other stakeholder perspective. Secondly, the stakeholders may interact with the system, thus enabling them to select the information that is most relevant to them.

The system further provides continuously updated outcome displays on value realization performance similar to outcome displays that would otherwise be available from a transaction-based accounting system.

In accordance with an aspect of the invention, a method of and system for processing data relating to the value creation and value realization performance of a business enterprise is provided in which an assurance report can be provided, for example by one or more third parties, on an outcome display as selected by a stakeholder-user. Certain assurance procedures are automated so that they can be undertaken in real time, in parallel with the generation of the outcome displays on which the assurance report is being provided. Where appropriate, stakeholder-users are able to specify the level of assurance they require. Assurance reports generated by the system may be customized in order to be relevant to the particular outcome display to which they refer, for example by using the particular choices made by a stakeholder-user in selecting the attributes of a particular outcome display. Certain of the real time automated procedures and the generation of an assurance report in real time may be performed independently, for example, by a third party assurance provider, on a parallel system.

In an aspect, the invention affords a method for providing an assurance report on information relating to the performance of a business enterprise. The method comprises the steps of developing a data structure including information relating to the performance of the business enterprise, specifying one or more reporting options relating to display criteria for formatting an outcome display of information corresponding to the performance of the business enterprise, presenting the outcome display of information, performing assurance procedures to verify the accuracy of the presented information, and generating a resulting assurance report relating to the outcome display of information indicating the accuracy of the presented information.

The data structure may include information relating to the value creation performance of the business enterprise, information relating to the value realization performance of the business

enterprise, or information relating to the performance of a business enterprise as measured by generally accepted alternative reporting formats.

Further, the presenting step comprises the steps of selecting an event filter based on the reporting options for filtering an event matrix in accordance with the reporting options and extracting information from the event matrix related to the received display criteria; selecting a calculation engine based on the reporting options and generating the outcome display information from the extracted information from the event matrix using appropriate calculation formulae associated with the calculation engine; and presenting the resulting outcome display information. The event matrix may include one or more event entries relating to past and future events.

The presenting step further comprises the step of continuously updating the outcome display information upon one or more events or related assumptions in the event matrix being updated to reflect an occurrence or non-occurrence of an event. Performing assurance procedures further comprises selecting one or more assurance procedures from a library of available assurance procedures for verifying the outcome display information in accordance with one or more established decision rules. Respective ones of the decision rules are associated with particular outcome displays that can be selected to view particular information relating to the performance of a business enterprise. The assurance procedures are preferably performed in real-time, and may be performed independently in parallel with generating the outcome display information.

Generating the assurance report further comprises aggregating results of performing one or more assurance procedures for verifying the accuracy of the outcome display information and generating the assurance report in accordance with those results. The assurance report is preferably generated in real-time in accordance with the results of performing the assurance procedures, and may be continuously updated upon one or more events or related assumptions in the event matrix being updated to reflect an occurrence or non-occurrence of an event relating to the outcome display information.

In another aspect, the invention provides a system for providing an assurance report on information relating to the performance of a business enterprise. The system comprises a memory device for storing a data structure including a plurality of first assumed variables that have an influence on a non-financial value stream of the business enterprise and including a plurality of second assumed variables that have an influence on a financial value stream of the business enterprise, a calculation engine for determining a first outcome of the non-financial

value stream of the business enterprise based upon events characterized by the first assumed variables, the first outcome influencing at least one of the second assumed variables and for determining a first present value of the financial value stream of the business enterprise based upon the first outcome and based upon the second assumed variables, an outcome display module for selecting outcome display reporting parameters for generating reports from information stored in the memory device, the outcome display reporting parameters being associated with certain ones of the first and second assumed variables stored in the memory device, a filter coupled with the calculation engine for selecting those certain ones of the first and second assumed variables from the memory device to be delivered to the calculation engine, and an assurance reporting module for generating an assurance report relating to a generated outcome display report to verify the accuracy of the outcome display report information.

Present and future events are characterized by the first and second assumed variables. The calculation engine repeatedly determines a series of updated outcomes of the non-financial value stream of the business enterprise and a series of updated present values of the financial value stream of the business enterprise based upon any assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more events.

The assurance reporting module includes a memory for storing one or more assurance procedures and one or more decision rules, and one or more of the assurance procedures are selected from the memory for verifying the outcome display information in accordance with one or more of the established decision rules. Respective ones of the decision rules are associated with particular outcome displays that can be selected to view particular information relating to the performance of the business enterprise.

Preferably, the assurance reporting module performs the assurance procedures in real-time, and may be performed independently in parallel with generating the outcome display information. The assurance reporting module generates the assurance report by aggregating results of performing one or more assurance procedures for verifying the accuracy of the outcome display information and generating the assurance report in accordance with those results. The assurance report is preferably generated in real-time in accordance with the results of performing the assurance procedures, and may be continuously updated based upon any assumed variables in the data structure being changed in response to the occurrence or non-occurrence of one or more events.

In an aspect, the invention affords a method for providing real-time benchmarking information relating to the performance of a business enterprise comprising the steps of developing a data structure including information related to the performance of a business enterprise; initiating a request for benchmarking information to a benchmarking network including one or more benchmarking service providers, each of the benchmarking service providers having one or more associated clients, the benchmarking service providers relaying the request for benchmarking information to their clients; responding to the request for benchmarking information by providing relevant benchmarking information to the associated benchmarking service providers; and aggregating the received benchmarking information to yield composite benchmark information relating to the performance of the business entity.

The data structure may include information relating to the value creation performance of a business enterprise, information relating to the value realization performance of a business enterprise, or information relating to the performance of a business enterprise as measured by generally accepted alternative performance reporting formats. Further, the data structure includes a plurality of future and past events and related assumptions. The benchmarking request may be repeatedly generated based on the occurrence of one or more events. Alternatively, accumulation of benchmarking information may take place continuously in the background.

In features of the invention, the initiating step further comprises initiating a request for benchmarking information to a first benchmarking service provider, and relaying that request to the one or more additional benchmarking service providers in the benchmarking network. For each notified client, the responding step further comprises searching for relevant benchmarking information from associated data structures and providing the relevant benchmarking information to the associated benchmarking service providers. Further, the aggregating step further comprises firstly aggregating by each of the associated benchmarking service providers the relevant benchmarking information from each of the responding client systems, providing the aggregated benchmarking information to the first benchmarking service provider, and secondly aggregating the aggregated benchmarking information with the relevant benchmarking information provided to the first benchmarking service provider from its client systems. In addition, benchmarking service providers may agree to continuously pool commonly requested benchmarking information in order to speed the response time of the system in response to benchmarking requests.

In another aspect, the invention affords a system for providing real-time benchmarking information relating to the performance of a business enterprise. The system comprises a memory device for storing a data structure including a plurality of first assumed variables that have an influence on a non-financial value stream of the business enterprise and including a plurality of second assumed variables that have an influence on a financial value stream of the business enterprise, a calculation engine for determining a first outcome of the non-financial value stream of the business enterprise based upon events characterized by the first assumed variables, the first outcome influencing at least one of the second assumed variables and for determining a first present value of the financial value stream of the business enterprise based upon the first outcome and based upon the second assumed variables, an outcome display module for selecting outcome display reporting parameters for generating reports from information stored in the memory device, the outcome display reporting parameters being associated with certain ones of the first and second assumed variables stored in the memory device, a filter coupled with the calculation engine for selecting those certain ones of the first and second assumed variables from the memory device to be delivered to the calculation engine, and a benchmarking module for providing benchmarking information relating to the comparable performance of a particular business enterprise with other business enterprises.

In features of the invention, present and future events are characterized by the first and second assumed variables. In addition, the calculation engine repeatedly determines a series of updated outcomes of the non-financial value stream of the business enterprise and a series of updated present values of the financial value stream of the business enterprise based upon any assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more events. The benchmarking information is preferably provided in real-time and is continuously updated based upon any assumed variables in the data structure being changed in response to the occurrence or non-occurrence of one or more events.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1A illustrates a block diagrammatic view of a computer network system in accordance with the present invention;

Figure 1B illustrates a diagrammatic view of initial choices that may be available to a user in determining whether to view value creation or value realization information when using the system of the invention;

Figure 2 illustrates a block diagrammatic view of software architecture for enabling the value creation mode of the computer system of Figure 1A in accordance with the present invention;

Figure 3 illustrates a flow diagram showing determination of outcomes based upon different assumptions;

Figure 4 illustrates a flow diagram for determining net present value of future financial values streams of a business enterprise in accordance with the present invention;

Figure 5 illustrates the flow diagram of Figure 4 including exemplary projected cash flows and related probabilities;

Figure 6 illustrates the flow diagram of Figure 3 including exemplary values for various assumptions;

Figure 7 illustrates a chart showing a comparison between targeted and actual values for on-time performance, a non-financial outcome;

Figure 8 illustrates a chart showing a comparison between targeted and actual values for annual IP filings, another non-financial outcome;

Figure 9 illustrates a chart showing a comparison between targeted and actual values for supercomputing capacity, yet another non-financial outcome;

Figure 10 illustrates a chart showing a comparison between targeted and actual numbers of extranets, a further non-financial outcome;

Figure 11 illustrates an event matrix data structure for storing assumptions and their related events in accordance with the present invention when operating in value creation mode;

Figure 12 illustrates the event matrix data structure of Figure 11 including exemplary assumptions and related events;

Figure 13 illustrates an event matrix data structure for storing events and their related assumptions in accordance with the present invention when operating in value creation mode;

Figure 14 illustrates a flow diagram for determining the effect on present value based on value destruction and its related probability in accordance with the present invention;

Figure 15 illustrates the flow diagram of Figure 14 including an exemplary value destruction and related probability;

Figure 16 illustrates a flow diagram for determining an outcome variance for different future scenarios in accordance with the present invention;

Figure 17A illustrates an exemplary determination of outcome variance;

Figure 17B illustrates a flow diagram for determining a reliability index for a present value determination in accordance with the present invention; and

Figure 17C illustrates the flow diagram of Figure 17B including an exemplary determination of the reliability index.

Figure 18 illustrates a flow diagram for operation of the computer system of Figure 1A including various modes of user interaction in accordance with the present invention;

Figure 19 illustrates an exemplary arrangement of data in the event matrix in which user identities are stored in association with assumptions;

Figure 20 illustrates groupings of information from the matrix 400 which was provided by various stakeholders;

Figure 21 illustrates various metrics for which feedback may be provided by users or stakeholders in accordance with the present invention;

Figure 22 illustrates an event/assumption filter and calculation engine for determining various different outcomes based on the stored assumptions of various users;

Figure 23 illustrates a block diagrammatic view of a software architecture for enabling the system of the invention to operate in value realization mode;

Figure 24 is a diagrammatic view of the event matrix module of Figure 23 illustrating an example of certain event attributes for storing event information that may be used by the system while operating in value realization mode;

Figure 25A is a diagrammatic view of a customer object record that may be stored in the object database'

Figure 25B is a diagrammatic view of a product object record that may be stored in the object database;

Figure 25C is a diagrammatic view of a financial object record that may be stored in the object database;

Figure 26 is a diagrammatic view illustrating interaction between the event matrix module and the object database module for generating value realization outcome displays in accordance with the invention;

Figure 27 is a diagram illustrating a process flow for generating value realization outcome displays in accordance with the invention;

Figure 28 illustrates an example of outcome display generation using an outcome display interface for formatting customized outcome displays based on choices made by a stakeholder-user using the invention;

Figure 29 is a flow chart illustrating an exemplary method by which a customized assurance report on an outcome display may be generated in real time based on various automated procedures in accordance with the invention;

Figure 30 is an exemplary representation of assurance procedure decision rules that may be used by the system to generate a customized assurance report;

Figure 31 is an exemplary representation of the results of applying particular assurance procedure decision rules to generate a customized assurance report in accordance with the invention; and

Figure 32 is a flow chart illustrating a method for providing real-time benchmarking information relating to the performance of a business entity in accordance with the invention.

MODES FOR CARRYING OUT THE INVENTION

Figure 1A illustrates a block diagrammatic view of a computer network system 100 in accordance with the present invention. The system 100 may include a central processing unit (CPU) 102, a database 104, a display 106, a keyboard and mouse 108, a printer 110 and may interface with remote systems via a wide area network (WAN) or extranet 112 and local area network (LAN) or intranet 114. Printed outcome displays 116 may be provided by the printer 110.

Users may access the system 100 directly using the keyboard 108 and monitor 106, or remotely over the LAN or intranet 114, the WAN or extranet 112, or the World Wide Web. Results can be displayed on the local monitor 106, or printed by the local printer 110. Alternately, the results can be displayed by a remote computer monitor or printer (not shown).

It will be apparent that the computer network system 100 is conventional and that various modifications or substitutions may be made. The system 100 may embody the present invention by configuring the CPU 102 to operate in accordance with stored software programs so as to interact with data stored in the database 104, as explained herein.

Data that is relevant to performance of a business enterprise may maintained in the database 104 (Figure 1A). As used herein, "business enterprise" is intended to encompass for profit, not-for-profit and governmental organizations. The database 104 may be in form of a relational database. Input and output from the database 104 may be in the context of value creation or value realization.

The value creation context permits selection of one of four different "perspectives" into the data (e.g., each perspective may be an organization or arrangement of the data). These perspectives may include: a perspective that reflects the company's strategy for creating and realizing value, referred to herein as the value creation and realization formula; a value stream model perspective; a value creation capacity perspective; and a value creation for multiple stakeholders perspective.

The value creation and realization formula perspective provides a succinct overview of the business enterprise's strategy for creating and realizing value. This can include, for example, an identification of the goods or services to be provided by the business, an identification of the enterprise's position in any related value chain, an identification of the enterprise's strategy with respect to alliances, an identification of the enterprise's approach to financing its present and future operations, an identification of likely consumers of the goods or services, an identification of various markets to be entered and a time schedule in which those markets are anticipated to be entered. Thus, the database 104 may store such parameters in a matrix referred to herein as the formula matrix.

The value stream model perspective is described in more detail herein and relates to performance measurement of the business enterprise with respect to future value creation. This may include, for example, storing measurements of present financial value of one or more value streams of the business enterprise based upon projections of future events, including assumptions regarding the future events, probabilities of their occurrence and monetary amounts expected to be realized should they occur.

For the purposes of this document, a "value stream" for a business enterprise is an aggregation of financial and non-financial benefits flowing to the business and arising from a minimum set of activities that are necessary to give rise to the benefits. A "future value stream" refers to

those benefits which have not yet occurred with respect to a particular point in time, such as the present. An "historical value stream" refers to those benefits that have already been realized with respect to a particular point in time. A "financial value stream" refers to those benefits that are reducible to cash or cash equivalents. A "non-financial value stream" refers to those benefits that are not readily reducible to cash or cash equivalents. For example, a non-financial benefit may be enhanced customer loyalty. In addition to benefits, a value stream may have associated costs, such as cash outflows.

Events give rise to the benefits associated with value streams. An historical event may give rise to a benefit that has already been realized with respect to a particular point in time. For example, a sale of goods in the past (an historical event) may have already resulted in a financial benefit to the seller of the goods, in which case, the benefit belongs to an historical value stream. In addition, historical events may result in a benefit that has yet to be realized. For example, a license agreement already entered into (an historical event) may result in periodic payments that are not yet payable with respect to a particular point in time, in which case, these benefits are part of a future value stream. A series of related events are referred to herein as an "event stream." The database 104 may store parameters relating to events, benefits and value streams in a matrix referred to herein as the event matrix.

The value creation capacity perspective relates to the capabilities, infrastructure and networks required by the business enterprise for carrying out its strategy for creating and realizing value. Value creation capabilities may include, for example, manufacturing capability and innovation capability. The value creation infrastructure may include, for example, office space and capital equipment, such as telephone and computer systems. Value creation networks may include, for example, relationships with other business enterprises, such as suppliers, customers and distributors. Thus, the database 104 may store such parameters in a matrix referred to herein as the capacity matrix.

The value creation for multiple stakeholders' perspective relates to measurement of financial and non-financial value creation for key stakeholders. For example, a key stakeholder may be a shareholder in the business enterprise, in which case, the shareholder may be provided with measurements and analysis of financial value of the enterprise based upon future events. As another example, the stakeholder may be one of the business enterprise's customers. In which case, customers may be periodically surveyed to identify their expectations with regard to value creation and their level of satisfaction. The results of the survey may be stored in the database 104 and tracked over time so that trends in the survey results may be analyzed. It will be

apparent that data relevant to other types of stakeholders, such as employees, suppliers and business partners, or the community or society at large, may be included in the database 104. The database 104 may store such parameters in a matrix referred to herein as the stakeholders' matrix.

While data in the database 104 can be accessed from any of these perspectives as appropriate, for convenience, a specific dataset (e.g., a collection of assumed variables and events) is primarily associated with each particular perspective. Thus, a unique data structure or matrix may be associated with each of the four different perspectives.

The value realization context permits selection of one of a number of value realization outcome displays, including outcome displays that provide information similar to that provided by conventional transaction-based accounting systems. However, in accordance with the invention, the outcome displays are provided by applying an appropriate filter and calculation engine to the event-based information in the database to generate the selected report.

Figure 1B is a diagrammatic view of initial choices (initial selection 105) available to a user in determining whether to view value creation (value creation mode 106) or value realization information (value realization mode 107).

Figure 2 illustrates a block diagrammatic view of a software architecture 200 for enabling the value creation mode of the present invention for the computer system 100 of Figure 1A. The software architecture 200 includes a number of software modules 202-220, each of which controls the CPU 102 to perform certain functions, as explained herein. An integration module 202 reconciles the four different perspectives and transfers information among them. Thus, for example, if data stored in the matrix associated with the value creation formula perspective is changed, the integration module 202 ensures that corresponding data stored in the matrices associated with the other perspectives is appropriately updated. As shown in Figure 2, the integration module 202 interfaces with a formula matrix module 204, an event matrix module 206, a capacity matrix module 208 and a stakeholders' matrix module 210.

The formula matrix module 204 manages the data matrix stored in the database 104 (Figure 1A) which is relevant to the formulation of a strategy for the business in creating and realizing value. The event matrix module 206 manages the data matrix stored in the database 104 which is relevant to the value stream model perspective. The capacity matrix module 208 manages the data matrix stored in the database 104 which is relevant to the value creation capacity perspective. The stakeholders' matrix module 210 manages data stored in the matrix that is relevant to the multiple stakeholders' perspective.

The formula matrix module 204 interfaces with a major premises module 212. The major premises module 212 allows a user to input and alter assumed variables stored in the database 104 (Figure 1A). These may be, for example, assumptions regarding the industry of which the business enterprise is a part. The major premises module 212 also interfaces with a success criteria module 214 that allows a user to input and alter measures of success for the business enterprise.

The major premises module 214 also interfaces with a strategic decisions module 216. The strategic decisions module 216 allows a user to define different decision trees, within the data matrix associated with the formula matrix module 204, which depend upon various strategic options available to management of the business enterprise. The strategic decisions module 216 also interfaces with an other formula elements module 218 that allows a user to input and alter other criteria relevant to evaluation of the value creation performance of the business enterprise.

The other formula elements module 218 also interfaces with a scenario grouping module 220. The scenario grouping module 220 allows a user to assemble existing data and to add additional data representative of alternate scenarios for the future of the business enterprise. For example, a base case scenario 222 may be established by a particular assemblage of events and related assumptions (e.g., assumed variables) for the business enterprise. For example, the base case scenario may include a current operational scenario that the business enterprise is implementing. One or more additional alternate scenarios 224 may also be established including a different set of events and related assumptions for each alternate scenario. For example, the alternate scenarios may be under consideration for possible future adoption by the enterprise.

Thus, in value creation mode, the system 100 (Figure 1A) provides an ability to analyze scenarios, consisting of particular groupings of events and related assumptions. As a result, a user may be provided with a plurality of outcomes 226 for the base case scenario, taken from each of the four perspectives. In addition, the user may be provided with a plurality of alternate outcomes 228 for each alternate scenario.

As is described herein, the same underlying determinations made by the system 100 in value creation mode can be deployed in two principal "contexts" (e.g., conditions under which determinations are employed). In a first context, the system 100 generates comparisons between the base case and alternative future scenarios. Thus, the first context (also referred to herein as "vision view") facilitates the choice of an optimal future scenario to maximize value creation of the business enterprise. Accordingly, the first context is particularly useful for

strategic planning. In a second context, the system 100 compares the organization's actual value creation performance during a period of time to the performance predicted at the beginning of that time period. Thus, in the second context (also referred to herein as "performance view"), the value creation performance of the business enterprise may be evaluated with the benefit of hindsight and measured against value creation that was previously predicted for the enterprise.

Figure 3 illustrates a flow diagram 300 showing determination of outcomes in value creation mode based upon different assumptions. For example, the CPU 102 can be controlled to determine the outcomes 226 (Figure 2) from the groups of scenarios 220 (Figure 2) in accordance with the flow diagram 300 of Figure 3. In a state 302, data relevant to the various scenarios may be retrieved from the database 104 (Figure 1A) to the CPU 102 (Figure 2). Then, in a state 304, the data for the assumptions and their related events may be assembled into scenarios.

As explained above, the event matrix stored in the database 104 is a relational database in which assumptions (e.g., assumed variables), events, and their related probabilities are collected and grouped into the various base case and alternative scenarios. Some assumptions may be scenario-independent and, thus, are constant throughout all the scenarios. Other assumptions, however, may vary scenario by scenario. Thus, for example, an assumption ("Assumption a") may be set at value a_1 in the base case scenario, at value a_2 in a first alternate scenario ("Scenario A"), and at value a_3 in yet another alternate scenario ("Scenario B"). Each of the scenarios yields "scenario stakeholder outcomes" as further described below. The scenario stakeholder outcomes (and how they vary over time) for the base case may be used for performance tracking. The other scenario outcomes may be used as "what-if" comparisons for strategic planning.

Next, program flow may move to a state 306 where equations for determining present value are applied to the events and assumptions for the base case scenario (exemplary computations are discussed herein). Then, from the state 306, program flow moves to a state 308 where outcomes determined by the computations performed in the state 306 are presented. For example, the outcomes may include a monetary amount (a financial outcome) determined to be the present value of the future value streams of the business enterprise based upon the base case assumptions. Alternately, the outcomes may include measurements of non-financial value creation.

In addition, from the state 304, program flow may move to a state 310. In the state 310, equations for determining present value are applied to the events and assumptions for the first alternate scenario ("Scenario A"). Then, from the state 310, program flow may move to a state 312 where outcomes determined by the computations performed in the state 306 are presented. For example, the outcomes may include a monetary amount determined to be the present value of the future value streams of the business enterprise, or a non-financial metric, based upon the Scenario A events and assumptions. Further, from the state 304 program flow may move to a state 314. In the state 314, equations for determining present value are applied to the events and assumptions for the second alternate scenario ("Scenario B"). Then, from the state 310, program flow may move to a state 312 where outcomes determined by the computations performed in the state 316 are presented. For example, the outcomes may include a monetary amount determined to be the present value of the future value streams of the business enterprise, or a non-financial metric, based upon the Scenario B assumptions.

Figure 4 illustrates a flow diagram 306 for determining net present value based upon value creation in accordance with the present invention. For example, the flow diagram of Figure 4 may be performed in the state 306 of Figure 3. In a state 352, an amount of a projected cash inflow ("CashIN") for a future financial value stream of the business enterprise may be adjusted by a factor that accounts for the time period between the present and the time that the cash inflow is expected. For example, the factor may be an after-tax, risk-adjusted discount rate ("ra_atr"). The amount of cash inflow, CashIN, may be an assumed variable that influences a future financial value stream for business enterprise. An event may occur, for example, which triggers the cash flow. Next, program flow may move to a state 354 where the projected cash inflow determined in the state 352 may be adjusted by a estimated probability that the cash flow will be realized. From the state 354, program flow moves to a state 356.

In the state 356, any additional influences on the future financial value stream for the business (e.g., projected cash inflows) for the same or additional future financial value streams may be adjusted, as in the states 352 and 354 and summed (e.g., aggregated) to determine a total present value for the future financial value streams of the business enterprise. The computations performed in the states 352-356 may expressed as follows (for example, the selected stakeholder category may be "shareholders"):

The present value of projected after-tax cash inflows may be given by:

$$InPV = \sum_1^n CashIN_i \times \left(\frac{1}{1+ra\_atr} \right)^i \times InProb$$

where CashIN represents the projected after-tax cash inflow for a specific year; ra_atr is the after-tax risk-adjusted discount rate (adjusted for industry and company-wide risks); InProb is the probability (as assessed by the user or by management of the business enterprise) of the inflows occurring; and InPV is the discounted present value of cash inflows.

The value:

$$\sum_1^n CashIN_i \times \left(\frac{1}{1+ra\_atr} \right)^i$$

represents the conventional discounted cash flow (DCF) formula for computing a present value (PV) of $CashIN_1$ in year 1; $CashIN_2$ in year 2, etc.

In a state 358, an amount of a projected cash outflow ("CashOUT") for a future financial value stream may be adjusted by a factor that accounts for the time period between the present and the time that the cash outflow is expected. For example, the factor may be a risk-free, after-tax discount rate ("rf_atr"). Next, program flow may move to a state 360 where the projected cash outflow determined in the state 358 may be adjusted by a estimated probability that the cash outflow will occur. From the state 360, program flow moves to a state 362.

In the state 362, any additional projected cash outflows for the same or any additional future financial value streams may be adjusted, as in the states 358 and 360 and summed to determine a total present value for the business enterprise that is attributable to cash outflows. The computations performed in the states 358-362 may expressed as follows (for example, selected the stakeholder category may be "shareholders"):

The present value of projected after-tax cash outflows is given by:

$$OutPV = \sum_1^n CashOUT_i \times \left(\frac{1}{1+rf\_atr} \right)^i \times OutProb$$

where CashOUT represents the projected after-tax cash outflow for a specific year; rf_atr is the risk-free after-tax discount rate; OutProb is the probability (as assessed by the user or by management of the business enterprise) of the outflows occurring; and OutPV is the discounted present value of cash outflows.

Next program flow moves to a state 364 where the total present value of projected cash outflows may be subtracted from the total present value of projected cash inflows to determine a net present value for the future value streams of the business enterprise.

The net present value (NetPV) computed in the state 364 may be given by:

$$NetPV = InPV - OutPV$$

where NetPV is the net of the present values of cash inflows and outflows.

Then, program flow moves from the state 364 to a state 366 where the effect of real options value (if any) included in any of the enterprise's strategies may be incorporated in the computation. Thus, the present value computed in the state 366 may be given by:

$$TotNetPV = NetPV + RealOptVal$$

where RealOptVal is the "real options value" of the ability to defer certain expenses until future events suggest that further investment is warranted (similar to taking an option on a stock before advancing the full investment price of the stock). The real options value may be determined conventionally by reference to the Black-Scholes equation.

It will be apparent that the above formulas are exemplary and are taken from the perspective of a shareholder. Other formulas may be used to calculate present values for any of the other stakeholder groups. For example, from the perspective of a stakeholder that is a joint venture partner, the events, their associated probabilities of occurrence and their associated financial benefits will result in different financial outcomes than those experienced by a shareholder.

Figure 5 illustrates the flow diagram 306 of Figure 4 including exemplary projected cash flows and related probabilities. The example considers a case where a pharmaceutical company anticipates the sale of rights to manufacture a particular drug 3 years in the future for $10.000

million. Therefore, in the state 352, CashIN is equal to $10.000 million. In addition, the after-tax risk-adjusted discount rate, which is adjusted for industry-wide and company-wide risks, is assumed to be 8%. Therefore, ra_atr used for this example for cash inflows is equal to 0.08. Since with the drug project is just through Phase III Clinical Trials, the probability that the drug will be approved by the Food and Drug Administration (FDA) and final commercialization is estimated at 50%. Therefore, InProb for this example is 50%.

In that case, the above formula:

$$InPV = \sum_1^n CashIN_i \times \left(\frac{1}{1+ra\_atr}\right)^i \times InProb$$

simplifies to:

$$InPV = 10.000 \times \left(\frac{1}{1.08}\right)^3 \times 50\% = 3.969$$

Also in the example, the expenses associated with commercialization of the drug are estimated to be $2.000 million. The after-tax risk-free discount rate, rf_atr, used for cash outflows is assumed to be 4%. In addition, the same probability of 50% is associated with the outflow.

Accordingly, the formula:

$$OutPV = \sum_1^n CashOUT_i \times \left(\frac{1}{1+rf\_atr}\right)^i \times OutProb$$

simplifies to:

$$OutPV = 2.000 \times \left(\frac{1}{1.04}\right)^3 \times 50\% = 0.444$$

and so

$$\text{NetPV} = \text{InPV} - \text{OutPV} = 3.969 - 0.444 = 3.525$$

Depending upon the circumstances, the rates for ra_atr and rf_atr may be larger or smaller. In addition, under certain circumstances it may be appropriate to use a surplus cash after-tax short-term investment-rate (rather than an after-tax risk-free rate) for cash outflows.

Adding a real options value of $0.300 million (calculation not shown in this example but may be performed in accordance with conventional techniques) yields:

$$\text{TotNetPV} = \text{NetPV} + \text{RealOptVal} = 3{,}525 + 0.300 = 3{,}825$$

As a more complex example, Figure 6 illustrates the flow diagram of Figure 3 including exemplary values for various assumptions (e.g., assumed variables). In the example, a fictional pharmaceutical company, referred to herein as "Company A," is involving a larger company as a partner, referred to herein as "Big Pharma," in all its clinical trials. As a base case scenario, license fees are assumed to be 60% for Phase I trials, 60% for Phase II trials, and 100% for Phase III Trials and ongoing royalties on subsequent commercialized sales are assumed to be 20%. With this amount of projected license fees, no further capital is expected to be required since the initial capital was raised with the base case scenario in mind. Commercialization and related revenues is expected to start in the year 2010. To determine the present value of the future financial value streams of the business enterprise taking into account this base case scenario, computations may be performed in accordance with the flow diagram illustrated in Figure 4. However, the details of the computations are not shown in Figure 6. The outcome for the base case scenario, for example, may be a present value (PV) of $296 million.

In addition, two alternative scenarios may be presented. In a first alternate scenario ("Scenario A"), the company conducts the Phase I trials on its own and only involves Big Pharma partner in Phase II and III trials. Because of the lesser financial commitment of Big Pharma, it would normally pay a higher royalty rate on ultimate sales. However, this scenario may require Company A to raise additional capital of $90 million to make up for the missing Phase I license fees. As an offsetting factor, commercialization and related revenues are expected to start in the year 2009. This is because a Big Pharma has its own ongoing manufacturing operations to consider with research and development tending to be a minor sideline. Consequently, Company A itself is expected to act more quickly than Big Pharma. Therefore, commercialization in Scenario A is expected to occur more quickly in comparison to the base case scenario.

Therefore, if Company A conducts the Phase I trials on its own, they will be completed somewhat sooner, thus advancing the final commercialization date. In computing the outcome, the discounted cash flow calculations utilized to determine the present value reflect the lower license fees (unfavorable), the higher royalty rates (favorable), and the earlier commercialization date (favorable). The net effect in this assumed example, is a computed present value (PV) of $204 million. Clearly, at present, Company A achieves a better outcome with the base case scenario. Accordingly, the better choice is to direct the company along the path indicated by the base case scenario.

Various factors, however, may change over time. If, as a result of revised assumptions (revenues, costs, timing, etc.) the recomputed Scenario A ever turns out to be more favorable than the recomputed base case scenario, then Company A will likely change its strategic decisions and opt for Scenario A.

In a second alternate scenario ("Scenario B"), Company A conducts the very long and expensive Phase III trials on its own and involves Big Pharma as a partner in only the Phase I and II trials. Compensating factors expected to result from this more significant change are an increase of the royalty rate to 28% and acceleration of the commencement of commercialization to the year 2008. However, Company A may have to raise an additional $300 million capital to finance the Phase III trials. When the present value is computed with all of these changes factored in, present value under Scenario B may be found to be $231 million. Again, the base case scenario at remains the most favorable. Updated assumptions may continue to be collected in the database 104 (Figure 1A) for each of these scenarios, as various events transpire so that, at any time, management can decide to change strategic direction should an alternative scenario prove optimal at some point in the future.

Figure 6 also shows the comparative values for the Big Pharma stakeholder. While this is not shown in the example, the system may generate the present value of the base case and each alternative scenario for multiple stakeholders. The difference in the computations is that from the perspective of the Big Pharma company there will be different assumptions made about cash inflows and outflows and their associated probabilities.

Some scenarios may eventually cease to be viable alternatives. For example, assuming Company A has contracted with Big Pharma to participate in the Phase I Clinical Trials, Scenario A is no longer a continuing option. As such, Scenario A may be dropped from the database 104 (Figure 1A). Depending on how the contract with the Big Pharma has been drawn

up, however, Scenario B may continue to be a viable option that may be revisited at a later time (e.g., as the time for the Phase III Clinical Trials draws closer).

As noted above, a "financial value stream" refers to those benefits that are reducible to cash or cash equivalents, whereas, a "non-financial value stream" refers to those benefits which are not readily reducible to cash and cash equivalents. More specifically, non-financial value streams are quantified by various metrics that measure value creation performance of the business enterprise with respect to the value creation expectations of stakeholders. Those value creation expectations are related to benefits that are not readily reducible to cash and cash equivalents. A non-financial outcome is an expected quantification, such as a numeric value or a yes/no result, expected to result from a particular non-financial value stream.

As is the case with future financial value streams, the determination of non-financial value streams or outcome metrics can be viewed in either vision view, in which case the system calculates a future projected outcome based on assumed variables, or in performance tracking view, where the system compares a target or future outcome with actual achieved performance.

To further illustrate, numerous non-financial value streams related to expectations of various categories of stakeholders are possible. An example of a non-financial value stream for stakeholders who are customers is "on-time performance." For Company A, a pharmaceutical company, a quantifiable metric for on-time performance may be the number of drug formulas which are delivered on, or ahead of, a predefined schedule in a given year. This metric may be predicted by computing an outcome based upon assumed variables and influencing events. In addition, historic values for this metric may be measured and compared to the predicted values. Figure 7 illustrates a chart 350 showing a comparison between targeted and actual numbers of drug formulas delivered on or ahead of schedule.

The on-time Performance relates to the expectations of a class of stakeholders of Company A (e.g., customers). An exemplary formula for calculating a metric for on-time performance (i.e. a non-financial outcome) in vision mode (i.e. the metric is prospective of on-time performance rather than historic) may be as follows:

$$\text{future (or target) on-time performance} = (A \times D) + (A \times E) + (A \times F)$$

Where assumed variables are as follows: A is the number of active drug development projects; D is the percentage of projects expected to generate viable formulas in the current year; E is a

factor that is related to innovation capabilities defined in a capacity matrix; and F is a factor that is related to employee productivity which is related to employee value creation in the stakeholder matrix.

Each of these assumed variables may be linked to an event in the event/assumption matrix stored in the database 104 (Figure 1A). For example, the assumed value, A, for the number of active drug development projects may change if an event occurs defined as the company launching one or more new projects. As another example, the percentage, D, of projects expected to generate viable formulas in the current year may be linked to past external events (e.g., an industry average). Further, the factor, E, in the capacity matrix may also be linked to future events relating to innovation. Also, the factor, F, in the stakeholder matrix may be linked to future events relating to employee productivity which is linked to company performance with respect to respect and recognition of employees.

As shown in Figure 7, the calculated target outcome for 2001 is 10. This value may result from the following assumed values:

A = 25 (there are 25 active drug development projects);

D = 60% (based on industry averages, 60% of these projects should result in generating a formula for further testing and development);

E = - 20% (since Company A was recently established, its innovation capability is still ramping up, and E is assigned a value that represents a discount attributable to lower innovation capability than the industry average); and

F = 0 % (is it is assumed that the company will meet the value creation expectations of employees with respect to respect and recognition, with the result that this event/assumed variable has neither a positive or negative influence on the outcome).

In a performance tracking mode, the previously calculated outcome value for on-time performance (in vision mode) may be compared to actual historic performance. Significant differences between anticipated and actual performance may be indicative of a performance problem in the company that management should address, or alternatively, may indicate that assumed variables are incorrect and the model needs to be re-calibrated accordingly. Thus, Figure 7 shows exemplary historic values for each of the years 2000, 2001 and 2002 compared to projected outcome values for those same years.

The metric for on-time performance may, in turn, be linked to other financial or non-financial assumed variables and related events. For example, the event/assumption matrix may contain

an event related to customer expectations with respect to on-time performance. A significant discrepancy between previously projected on-time performance (in vision mode) and actual on-time performance (in performance-tracking mode) may trigger this event, which in turn may be linked to assumed variables which influence the timing of future commercialization revenues. Thus, a computed non-financial outcome may be an event which triggers a computation of a financial outcome and may also be an input (e.g., by influencing an assumed variable) to the computation of the financial outcome.

Another example of a non-financial value stream for stakeholders who are employees is "respect and recognition." An example of a metric for respect and recognition may be the number of employees who are awarded official recognition by company management in a given year. Another example of a metric for respect and recognition may be attrition rate of employees in a given year. A further example of a metric for respect and recognition may be results of a survey of, or feedback from, employees which asks them to assess how well company management is doing in this regard.

An example of a non-financial value stream for stakeholders who are shareholders is "access to information." An example of a metric for access to information may be a number of press releases generated by the company in a given year. Another example of such a metric may be results of a survey of, or feedback from, shareholders which asks them to assess how well company management is doing in this regard.

An example of a non-financial value stream for stakeholders who are suppliers is "collaboration on new opportunities." An example of a metric for this value stream may be a number of new supply channels opened to a given a supplier in a given year. Another example of such a metric may be results of a survey of, or feedback from, suppliers which asks them to assess how well company management is doing in this regard.

An example of a non-financial value stream for stakeholders who are the community and society at large in which the company operates may be "environmental responsibility." An example of a metric for this value stream may be measured levels or quantities of various recognized environmentally hazardous substances that are generated by the company. Another example of such a metric may be results of a survey of, or feedback from, members of the community which asks them to assess how well company management is doing in this regard.

The various non-financial value streams and non-financial outcomes may be grouped into the following categories: capability metrics; infrastructure metrics; and networks metrics. Accordingly, events and assumed variables which influence these non-financial value streams

and outcomes can be stored in corresponding matrixes in the database 104, along with the events and assumed variables which influence financial value streams.

An example of a non-financial outcome in the above-described capability metrics category is "annual intellectual property (IP) filings." Figure 8 illustrates a chart 352 showing a comparison between targeted and actual numbers of IP filings made (e.g., a number of patent applications). To determine the number of annual IP filings as a non-financial outcome metric in vision mode (i.e. prospectively) for Company A, a formula may be expressed by:

future (or target) annual IP filings = A X B X C

Where assumed values are as follows: A is the number of active drug development projects; B is the average number of scientists per development project; and C is the average number of patents targeted per scientist per year.

Each of the assumed values may be linked to an event in the event/assumption matrix stored in the database 104 (Figure 1A). For example, the assumed value, A, for the number of active drug development projects may change if an event occurs defined as the company launching one or more new projects. As another example, the assumed value, B, for the number of scientists per development project may change if the company an event occurs defined as a success in recruiting a targeted group of scientists. Accordingly, occurrence or non-occurrence of events in the event matrix may trigger computation of a non-financial outcome.

As shown in Figure 8, the calculated value for 2001 is 375. This may result from the following assumed values:

A = 25;

B = 6; and

C = 2.5.

In a performance tracking mode, the calculated outcome value for annual IP filings may be compared to actual performance. Thus, as shown in Figure 8, projected values are compared to actual values for the years 2000, 2001 and 2002. Significant differences between anticipated and actual performance may be indicative of a performance problem in the company that management should address, or alternatively, may indicate that assumed variables are incorrect and the model needs to be re-calibrated accordingly.

As noted above, the value for annual IP filings in performance-tracking mode may, in turn, be linked to other financial or non-financial assumed variables and related events. The system 100 (Figure 1A) may compare the actual performance in annual IP filings with a previous calculation of annual IP filings in vision mode. A significant discrepancy may trigger an event in the event/assumption matrix related to annual IP filings which, in turn, may trigger computation of a financial value. For example, the annual IP filings event may influence assumed variables related to future licensing revenue from patents.

An example of a non-financial outcome in the above-described infrastructure metrics category is "supercomputing capacity." Figure 9 illustrates a chart 354 showing a comparison between targeted and actual levels of normalized computing capacity, for example, measured in millions of instructions per second (MIPS). An example of a non-financial outcome in the above-described network metrics category is "global human genomics extranets." Figure 10 illustrates a chart 356 showing a comparison between targeted and actual participation in extranets by targeted institutions.

As can be seen, these non-financial value streams and outcomes are not readily reducible to financial values, however, they may influence financial value streams. Thus, the non-financial value stream metrics and non-financial outcome metrics generated by the system can be grouped into two categories: those which produce outcome metrics that are themselves classified as events for purposes of generating financial value creation outcomes and hence, may result in modifications to financial value creation outcomes; and those which are not classified as events.

An example of a non-financial outcome which may, itself, be a event which influences a financial value stream is the annual IP filings metric, as discussed above. An event in the event/assumption matrix may be related to whether annual IP filings are significantly above or below a predefined threshold. An assumed variable related to this event may be future licensing revenue, which in turn will influence future financial value streams. Thus, if the non-financial outcome indicates that annual IP filings are above the predefined threshold, this fact may result in an increased probability that revenue will be derived from technology licensing activities. Accordingly, a probability applied to determine a present value of a future financial value stream, as explained herein, may be increased, which will, in turn, increase the present value for the corresponding value stream.

Another example of a non-financial outcome which may influence a financial outcome is the metric representative of employee respect and recognition, as discussed above. The

performance of the company in meeting this expectation may be tracked, for example, by a survey of employees. An event in the event/assumption matrix may be related to whether such a survey reveals that company performance in this respect is significantly below or significantly above a defined threshold. An assumed variable related to this event may be employee productivity, which in turn may influence the amount and timing of future financial value streams. In addition, this metric of respect and recognition may also influence other non-financial value streams, such as that related to on-time performance.

Thus, events may be linked to non-financial metrics (and vice versa), including future non-financial value streams (e.g., stakeholder expectations with respect to value creation to the extent these are non-financial) and to non-financial outcomes in the capacity matrix (e.g., capabilities, infrastructure, networks). In addition, certain non-financial metrics, in turn, are defined as events in the event/assumption matrix and, hence, may influence future financial value streams in addition to future non-financial value streams.

As mentioned, non-financial outcomes may be determined based upon associated assumed variables and their influencing events. A formula matrix may be created for an enterprise and stored in the database 104 (Figure 1A). The formula matrix may define, for example, what financial and non-financial value streams are to be modeled, what key scenarios must be examined in the event/assumption matrix, what key capabilities must be tracked in the capacity matrix, what the relevant stakeholder groups are that must be incorporated into the stakeholder matrix, etc. In other words, the formula matrix sets up the key parameters of the overall system.

Events and assumed variables are organized in several data structures. Events and assumed variables related to financial value creation outcomes are organized in the event/assumption matrix, as described above. Assumed variables relating to non-financial value streams or outcomes may be organized in a stakeholder matrix or a capacity matrix in the database 104. All assumed variables that have an influence on a future financial or non-financial value stream of the business enterprise are linked to at least one future or past event for each assumed variable that influences the corresponding assumed variable. Note that some assumed variables may be located in the capacity or stakeholder matrix, but may be linked to events in the event matrix. In addition, certain outcome metrics relating to capacity or stakeholders may be events in the event/assumption matrix.

A generic formula for calculating a metric that represents a non-financial value stream or non-financial outcome may be given as follows:

Non-financial outcome metric = f (assumed variables $_{1\text{-}n}$)

where n = the number of assumed variables linked to events that influencing the specified non-financial outcome. Thus, the non-financial outcome metric is a function of a number, n, of assumed variables. Software which controls the CPU 102 to determine the financial and non-financial outcomes as explained above is referred to herein as the "calculation engine" 802 (Figure 22).

Figure 11 illustrates an event matrix data structure 400 for storing assumptions (e.g., assumed variables) and their related events in accordance with the present invention when operating in value creation mode. As stated previously, the event matrix 400 stored in the database 104 (Figure 1A) is a relational database in which assumptions, events, and their related probabilities are collected for both financial and non-financial value streams. The system 100 is event-driven. That is, each assumption is based on various projected events that are expected to influence the related assumption. If over a period of time, the projected future events all come to pass exactly as anticipated, then the assumptions in the matrix 400 remain unchanged. However, if a projected event does not occur, or if it occurs in a different way or to a different extent than originally projected, or if a previously unanticipated event occurs, then the related assumption may be modified in the matrix 400.

In Figure 11, the matrix 400 contains the assumed variables that are utilized as a basis for computing the outcomes (e.g., present value for financial values streams or outcomes associated with non-financial value streams) of the future financial and non-financial value streams of the business enterprise, the related projected events (e.g., a related event stream) upon which the assumptions depend, and management's assessment of the probability of those events occurring. The assumption-event-probability relationships within the matrix 400 can be displayed in either of two ways. In an "assumption view," the system 100 presents the assumptions and, for each assumption, shows the influencing events. The assumption view is shown in Figure 11. In an "event view," the system 100 focuses first on events and, then, for each event shows the "affected assumptions." The event view of the event matrix 400 is shown in Figure 13.

As an illustration, Figure 11 (assumption view) shows that "Assumption a" is influenced by Event Streams 1, 2, and 3, while "Assumption b" is influenced by Event Streams 2, 4, and 5.

Note that more than one assumption may be influenced by the same event stream (e.g., both Assumption a and Assumption b may be influenced by Event Stream 2).

Each event stream can be further decomposed into specific component events in that stream. Thus, Event Stream 1 may include projected Event 1-1, Event 1-2 and Event 1-3. For each event, the matrix 400 may include additional information. This may include, for example, an anticipated date of occurrence, a probability of occurrence (as assessed by management), what will constitute evidence of occurrence, if and when the event occurs, and, prior to the event actually occurring, evidence of increasing likelihood that it will occur. In addition, evidence of decreasing likelihood that it will ever occur may be included. Also, an observer may be designated who will be charged with the responsibility of assessing these early warnings (whether evidence of increasing likelihood or evidence of decreasing likelihood) and for observing actual evidence of occurrence if the event, in fact, occurs. These observer-reported observations regarding the event stream may be continuously fed into the matrix 400, which in turn will affect the assumptions and therefore the projected outcomes based upon computation of the present value. Because the occurrence or non-occurrence of an event may trigger a re-computation of one or more of the outcomes, the system 100 (Figure 1A) may be said to be event-driven.

Figure 12 illustrates the event matrix data structure 400 of Figure 7 including exemplary assumptions and related events. In this example of a small portion of the event matrix 400, i.e., three assumptions and their related events, are considered. One is the assumption that Company A will earn a royalty rate of 20%. This assumption, in turn, will be influenced by three identified event streams: changes in competitor royalty rates, which would influence Company A's negotiations with potential Big Pharma partners; changes in the growth rate of world drug sales (e.g., a markedly higher rate might put downward pressure on royalty percentages); and Company A's negotiating success with other new potential partners (e.g., success in other negotiations would make the assumed royalty rate more likely).

Another assumption in the example is the assumed market growth rate for bio-tech drugs of 15% a year. This is a relatively high growth rate but reflects the explosion of opportunities that are anticipated to follow the impending completion of the Human Genome Project (the complete mapping of the human genome). This assumed future growth rate will be influenced by three identified event streams: changes in the current growth rate of world drug sales (e.g., a downturn in the current rate would suggest the possibility of a lower than previously forecast future growth rate); a change in the health care delivery system in China (e.g., certain

developments would open up that country for western bio-tech drugs, which would double or triple the potential market size); and the impact of non-drug therapies (e.g., if they increase in popularity, there may be a downturn in drug sales).

A third assumption in this small portion of the matrix 400 is the longevity assumption that a new Company A drug will last for 10 years after commercialization before it becomes obsolete as a result of a new, leap-frogging scientific discovery.

Each of the event streams can be further analyzed into specific component events in that stream. In this example, the event stream "changes in competitor royalty rates" contains at least three events. The rumored deal with a competitor (referred herein fictionally as "Company B") would raise the bar and generally lead to higher royalties. Such a deal might occur by June 1, 2000 but Company A management attributes a probability to this happening of only 10% to 20%. If it ever occurs, it will be immediately publicized by the scientific media.

In the meantime, whether talks are continuing (increasing likelihood) or become stalled (decreasing likelihood) is something that designated observer "Anne Smith" is charged with the responsibility of monitoring. It is expected that the next relevant observation she can likely make will be around Mar 1, 2000, although unexpected changes in timetable are possible. Another anticipated influencing event is the impact of new EU protocols that could have the effect of lowering royalty rates generally. Company A management estimates that there is only a 5% to 10% probability of these protocols ultimately being agreed upon. If they are adopted, it would most likely be on July 15, 2000 following the July EU Conference. Evidence of increasing likelihood would be progress in the consideration of the recent German proposals while decreasing likelihood would be suggested if the German proposals get dropped. Designated observer, "Kurt Heigel" will be monitoring this situation and will likely have an updated observation to make by mid April.

Finally, the impact of a recent merger of another competitor (referred to herein as "Company C") could have a minor reducing influence on royalties and Company A management estimates the effect is 50% probable. The effect is anticipated to be more likely if it turns out that the French senior management team of Company C is replaced and less likely if it turns out that there will be no reorganization of the French subsidiary. A designated observer, "Étienne Dupuy" may be monitoring this situation and will likely have an updated observation to make by early July.

The event matrix 400 also characterizes each assumption by type. Having such an organized typology of assumptions helps to assure that all relevant assumptions have been identified and

stated explicitly. Assumptions can be classified, for example, as: revenue assumptions; expense assumptions; discount rate assumptions; and timing assumptions.

Another aspect of the system 100 (Figure 1A) may be an organized typology of events. For example, events may be characterized as follows: (a) enterprise events, which are internal to or involving the enterprise, and which include: relational events (e.g., negotiations with a potential strategic partner); operational events (e.g., the completion of Phase II clinical trials); contractual events (e.g., the signing of a royalty agreement); transactional events (e.g., the receipt of license fees); observational events (e.g., observations made during marketing research); and decisional events (e.g., the decision to drop Drug A and develop Drug B); (b) external events, which are wholly outside the enterprise but ultimately influencing it, and which include: market events, which affect an entire industry; competitive events (e.g., the threat of a newly successful competitor); and supply events, which affect the availability of needed resources; (c) event implications, which include: new opportunities, which are clearly indicated; new confirmatory evidence that the future is unfolding as previously assumed; new contradictory evidence that the future may not be unfolding as assumed; and new threats, which are clearly identified.

Figure 13 illustrates an event matrix data structure for storing events and their related assumptions in accordance with the present invention when operating in value creation mode. As mentioned, in the event view, the system 100 (Figure 1A) displays events and, then, for each event shows the affected assumptions. In this figure, the event streams shown are Event Stream 1, Event Stream 2, and Event Stream 3. The first affects Assumptions a, d, and e; the second affects Assumptions a, b, and f; the third affects only Assumption a.

In addition, assumptions (i.e. assumed variables) stored in the event matrix 400 (Figures 11-13) are preferably arranged in a hierarchy (referred to herein as an "assumption hierarchy"). Thus, an assumption at one level may be influenced by assumptions at one or more lower, more detailed, levels. These lower level assumptions may be considered "underlying assumptions" relative to the assumptions which are influenced by them. For example, management of the business enterprise may assess that the probability of a particular revenue-generating event occurring over a six-month period is 30% for the first month, 10% for the second month, 7% for the third month and 1% for each of the fourth, fifth and sixth months. These assumptions for the individual months are underlying assumptions relative to an overriding assumption that the event has a 50% probability of occurring within the six-month period (30% + 10% + 7% + 1% + 1% + 1% = 50%). This overriding variable of 50% and the underlying variables of 30%,

10%, 7%, 1%, 1% and 1% may be stored in the event matrix 400 and may be inserted into a calculation of present value for that particular value stream. If the first month passes without the event occurring, then the 50% value may be reduced to 20% (10% + 7% + 1% + 1% + 1% = 20%) and the present value determined again based upon the new, lower probability.

The system 100 (Figure 1A) may determine four types of outcomes for each stakeholder: financial value creation, which includes the Present Value of future value creation streams; non-financial value creation, which includes appropriate metrics to reflect value streams that cannot be conveniently denominated in cash and cash equivalents; financial value destruction, which includes the Present Value of future value destruction streams; and non-financial value destruction, which includes appropriate metrics to reflect value destruction potential that cannot be conveniently denominated in cash and cash equivalents.

In any venture, there is always the potential for the loss of one's initial investment if the project fails. In such a case, the present value would be zero. However, it is not always that case that one's potential loss is limited to one's initial investment. Accordingly, the financial value destruction calculation is relevant in situations where the potential loss is greater than the investment at risk. Figure 14 illustrates a flow diagram 500 for determining the effect on present value based on financial value destruction and its related probability.

The steps for calculating financial value destruction parallel those described herein for calculating financial value creation. In a state 502, a projected after-tax cash value is ascertained for a financial value destruction instance. Then, program flow moves to a state 504 where the cash value is adjusted by an ascertained probability that the value destruction will occur. For example, the cash value may be multiplied by the probability. From the state 504 program flow moves to a state 506. In a state 506, a result of the adjustment performed in the state 504 may be presented.

Figure 15 illustrates the flow diagram of Figure 14 including an exemplary value destruction and related probability. In the value destruction example, Company A has become aware that under one scenario under consideration, if it decides to terminate a certain project, it risks losing one of its key lead scientists, which may in turn result in a loss of key contacts that are essential to the success of a second major project valued at $2 million. Thus, the cash value ascertained in the state 502 is $2 million. The probability attached to this combination of circumstances is 10%. Thus, in the state 504, when discounted at 8% (an after-tax non-risk adjusted discount rate, "ua_atr"), and multiplied by the 10% probability factor, the equation

$$ValDestrucPV = \sum_1^n ValDestruc_i \times \left(\frac{1}{1+ua\_atr}\right)^i \times DestrucProb$$

yields a present value of $79,000. This value may be presented as an outcome in the state 506.

Figure 16 illustrates a flow diagram for determining an outcome variance for different future scenarios in accordance with the present invention. In states 602, 604, and 606 outcomes, such as present values, for each of the base case scenario, and one or more additional scenarios (e.g., Scenarios A and B) may be determined, as explained herein. For tracking performance over time, the outcomes for the base case scenario may be determined with respect to a first point in time, while the outcomes for the alternate scenarios may be determined with respect to a later point in time.

Then, the various outcomes of these scenarios may be compared in states 608 and 610. This may be accomplished, for example, by determining an outcome variance using the following equation:

where $t_2 > t_1$:

$$OutcomeVar_{A>bc} = TotNetPV_A - TotNetPV_{bc} \times (1+ra\_atr)^{(t_2-t_1)}$$

This equation is equivalent to taking the present value (PV) at the beginning of the period in question, and adding a cost of capital return (COCr), and comparing the result to the calculated present value (PV) at the end of the period.

If the outcome variance is zero, then the organization has earned exactly the returns expected during the period. Normally, however, there will be a difference between the actual present value (PV) and the expected present value (PV) after adding the cost of capital return.

A next step that may be performed by the system 100 (Figure 1A) in the states 612 and 614 is an analysis of the changes in events and related assumptions that, in combination, account for the Outcome Variance. This analysis may be important to ensuring management accountability for the selection of events and assumptions in the event matrix 400 (Figures 7, 13).

A similar type of analysis can be performed to compare one or more scenarios at a particular point in time.

where $t_2 = t_1$:

$$OutcomeComp_{B>A} = TotNetPV_B - TotNetPV_A$$

In the case, the equation is used to compare the outcomes of the scenarios under comparison. A similar analysis of the reasons for the difference in outcomes can be performed to identify the critical differences in events and assumptions between the scenarios and may be important to strategic planning for the enterprise.

Figure 17A illustrates an exemplary determination of outcome variance. In Figure 17A, using the example for Company A, the calculation of an outcome variance of $53.929 million is shown based on applying a cost of capital return (COCr) to the present value (PV) at the beginning of the period (i.e. an opening present value), and comparing the result to the calculated PV for the current period.

This is followed by an analysis of the changes in events and assumptions that account for the calculated difference. In this illustration, the difference is accounted for by changes in 8 events or related assumptions:

Five changes in events or related assumptions caused PV to be higher than previously calculated: (1) expected increase in future sales for BioInformatics Tool #4; (2) expected increase in biotech sales world wide (which will also results in an increase in Company A sales); (3) a revision upward of the expected sales for Biotech Drug #26; (4) an upward increase in general sales growth based on the world sales increases the previous; and (5) slightly higher investment income performance.

Three changes in events or related assumptions caused PV to be lower than previously calculated: (1) slight overrun in R&D spending; (2) an expectation that this overrun would continue into the future; and (3) a higher donation to the World Health Organization (because of the positive outcome variance).

Figure 17B illustrates the calculation of a "reliability index."

In a state 702B, the present value determined for a base case scenario is segregated into those portions that are attributable to projected future events (PV_f) and those portions that are attributable to past events (PV_p). Then, in a state 704B, the reliability index is determined

taking into account the relative portions of the total PV contributed by projected future events and past events.

Accordingly, the reliability index may be determined from the following formula:

$$\text{reliability index} = PV_p/(PV_f + PV_p)$$

where PV_p is the PV attributable to past events (and related assumptions) and PV_f is the PV attributable to future events (and related assumptions). The higher the result (expressed as a fraction of 1), the greater the reliability of the estimate. It will be apparent that PV_f and PV_p may be combined in another way to determine a reliability index.

The reliability index provides a comparative indication of the degree to which calculated outcomes (e.g., present values) are attributable to assumptions based on events that have already occurred, versus assumptions based on future events. For example, if future sales projections are based on achieving a certain market share, and that market share has already been achieved, one would be inclined to place more reliance on those projections than if all required market gains were still in the future.

This calculation may be facilitated by flagging all events in the event matrix 400 (Figures 11 and 13) stored in the database 104 (Figure 1A) to indicate whether they have already occurred or are scheduled to occur in the future, and the fact that all assumptions in the system 100 are linked to events.

Figure 17C illustrates the flow diagram of Figure 17B including an exemplary determination of the reliability index. Building on Figure 5, Figure 17C shows that, for the particular value streams in question, $2.587 million of the calculated outcome can be attributed to events and related assumptions that are still in the future, while $1.238 million is attributed to past events. This yields a reliability index of 0.32.

The absolute value of the reliability index may be most helpful on a comparative basis where a reliability index for two or more different scenarios are compared. Management of a business enterprise may take into account such a comparison when making decisions about alternative scenarios.

Figure 18 illustrates a flow diagram 700 for operation of the computer system 102 of Figure 1A including various modes of user interaction in accordance with the present invention. Program flow begins in a start and user authorization state 702.

In the state 702, a verification of the identity of a user (e.g., a stakeholder-user) who is attempting to access the system 100 (Figure 1A) may be determined. This may include, for example, obtaining the user's identity, verifying the user's password and checking and recording a time stamp for the user' session. In addition, the user may be restricted from performing certain actions based upon the user's identity. Thus, different users may have different levels of authorization. This may include restricting the user to only be able to view certain designated information in the various matrices, or allowing the user to also modify certain designated information. Further, the user may be restricted to a particular mode (e.g., build mode or analysis mode) and access method (e.g., intranet or extranet). In addition, the user may be restricted to a particular level of detail such that only certain designated levels of the assumption hierarchy may be unavailable to the user for viewing or making changes. Generally, however, a user may be permitted to store an alternate assumption for any of the assumptions that the user is authorized to view. Assuming that in the state 702, the stakeholder-user is authorized to proceed, program flow moves to a state 704.

The system 100 may support five different types of users when operating in value creation mode. These may include: builders, who may be building, installing or modifying the system 100; updaters, who may be updating information (e.g., assumed variables) stored in the database 104 (Figure 1A); stakeholders, who may be using the system 100 to conduct analysis; assurers, who may have an responsibility to attest to the accuracy of information provided by the system 100; and reporters, who may wish to generate a report from the system 100. Accordingly, each user may be grouped or classified as a member of one of these groups or as a member of some other group, such as experts at value creation modeling, according to the user's identification.

To accommodate these users, the system 100 may operate in five different corresponding sub-modes of operation. The modes include: a build sub-mode, in which a builder may build, install or modify the system 100; an update sub-mode, in which a updater may update information in the database 104; an analysis sub-mode, in which a stakeholder may conduct analysis; an assurance sub-mode, in which an assurer may interact with the system in order to perform various assurance operations, and a reporting sub-mode, in which a reporter may generate various outcome displays. Accordingly, in the state 704, the user selects a sub-mode

of operation for the system 100 (Figure 1A) under which the user may interact with the system 100, including interaction with data stored in the database 104 (Figure 1A).

The build sub-mode provides an interface by which the user may initialize the system 100 (Figure 1A) for a particular business enterprise. Accordingly, the build sub-mode is generally a starting point for a user who is starting from scratch to build a data set for a particular business. This may include creating the event matrix 400, or other type of matrix in the database 104 (Figure 1A).

More particularly, assuming the user selects the build sub-mode in the state 704, program flow moves to a state 706. In the state 706, the user may select a downloadable template from a plurality of such templates. For example, downloadable templates for various different industries, sectors, or functions performed by the enterprise may be pre-stored at a centralized location in the network 100 (Figure 1A). For example, the templates may be downloadable from the Internet. Such a template may assist the stakeholder-user in using the build sub-mode by providing some of the information the database 104 (Figure 1A) which the user would otherwise provide manually. This information could include assumptions that are typical for the industry or sector, and relevant to the functions performed by the enterprise, such as research and development, manufacturing, distribution, and so forth.

From the state 706, program flow moves to a state 708. In the state 708, the user may select one of the four perspectives on the business enterprise (e.g., data arrangements) in which the user desires to work in the build mode. As mentioned, these perspectives include: (1) information relating to the enterprise's value creation and realization formula; (2) information relating to the enterprise's value stream model; (3) information relating to value creation capacity of the business enterprise; and (4) information relating to value creation for multiple stakeholders of the business enterprise.

Assuming the user selects the value creation and realization formula, program flow may move to a state 710. In the state 710, the user may specify or modify the value creation and realization components for the enterprise. These may include, for example, success criteria, key decisions, major premises, value creation capacity components, and identification of key stakeholders.

Alternately, if in the state 708, the user selects the value stream model, program flow may move to a state 712. In the state 712, the user may specify or modify the value stream model for the enterprise. This may include, for example, identification of value streams and their related

events and assumptions and specifying how outcomes (e.g., financial and non-financial) are to be determined based upon value creation and value destruction events.

If in the state 708, the user selects the value creation capacity, program flow may move to a state 714. In the state 714, the user may specify or modify the value creation capacity matrix for the business enterprise. This may include, for example, identifying components (e.g., capabilities, infrastructure and networks) needed by the enterprise to realize its value creation goals and identifying metrics for each of these components (e.g., capability metrics, infrastructure metrics and network metrics).

If in the state 708, the user selects value creation for multiple stakeholders, program flow may move to a state 716. In the state 716, the user may specify or modify the multiple stakeholders matrix for the business enterprise. This may include, for example, identifying relevant stakeholders (e.g., shareholders, customers, suppliers and distributors), and identifying appropriate value creation metrics for each (e.g., customer satisfaction levels or measures of how well the enterprise interacts with its suppliers and distributors).

From any of the states 710-716 program flow may move to an end state 718 in which the session with the stakeholder-user may terminate. Alternately, program flow may return to the state 704 where the stakeholder-user may select another mode of operation for the system 100 (Figure 1A).

Assuming the user selects the update mode in the state 704, program flow moves to a state 720. In the state 720, the stakeholder user may select one of the four perspectives on the business enterprise in which the user desires to work in the update mode. The update sub-mode provides an interface by which a stakeholder-user to make updates to the data in the database 104 (Figure 1A) for a particular business enterprise. This may include updating the event matrix 400 (Figures 11-13) as events occur that affect assumptions and related value streams. Alternately, this may include updating any of the other data, such as for the formula matrix, the capacity matrix or the multiple shareholders matrix, stored in the database 104.

If the user selects the value creation and realization formula, program flow may move from the state 720 to a state 722. In the state 722, the user may update information contained in the value creation and realization formula. This may include updating the success criteria, key decisions, major premises, capacity components and the stakeholder matrix.

Alternately, if in the state 720, the user selects the value stream model, then program flow moves to a state 724. In the state 724, the user may update existing information and may record

new information in the event matrix 400 (Figures 11-13). This may include updating the events and assumptions as events occur and assumptions change over time. For example, a designated observer may make a change in response to the occurrence or non-occurrence of an event. This may also include the user selecting a level of detail to view and record value stream information, such as at a designated level in the assumption hierarchy (assuming that the user has authorization to access information at the requested level). In addition, the user may select a particular value stream out of several stored value streams

Preferably, each entry in the event/assumption matrix 400 (Figures 11-13) (and the related assumptions in the capacity matrix and the stakeholder matrix) is tagged with a reference to the user who provided the information. For example, the user's identity may be stored in the database 104 (Figure 1A) in association with each element of information which was provided by that user. Accordingly, the information may be arranged according to who provided the information. Thus, a complete set of entries may be tagged and grouped as provided by management of the business enterprise. This grouping can be considered a base case or "official" scenario.

Each other stakeholder-user, or group of users, may develop alternate scenarios. For example, a user may substitute one or more of their own assumptions for those of the base case scenario to develop an alternate scenario. Similarly, the alternate scenarios of individual users may be grouped. Accordingly, in the state 724, the user may also select a particular scenario, out of the base case scenario and several stored alternate scenarios, in which the user may change any information relating to a particular event or assumption. For example, Figure 19 illustrates an exemplary arrangement of data in the event matrix 400 including some entries from the base case scenario and other entries from other users (in this case, Users A, B and C). The Figure 19 shows that user identities are stored in association with their stored assumptions. Three events are depicted in the event/assumption matrix 400. Event 1 was defined by Management, as was Assumption a. Users B and C, however, have provided alternative values for Assumption a. Event 2 was defined by Management. Assumptions b, c, and d are related to Event 2, and no alternative values have been provided by users. Event 3, however, was added by User A, as was the related Assumption e. User B, who has been authorized to view the stored assumptions of User A, has defined an alternative value for Assumption e.

Figure 20 illustrates groupings of information from the matrix 400 which was provided by various stakeholders. This includes the official base case scenario and multiple alternate scenarios for stakeholder-users (in this case, User A, User B and User C). The alternate

scenarios may be further arranged, as shown in Figure 20, in groups according to the contributors of the alternate assumptions (in this case, Users B and C). Each stakeholder-user when using the system 100 may have an opportunity to specify what perspective to work with (e.g., formula, value stream model, capacity, or stakeholder perspectives) and to specify the particular user or group of users (e.g., the management perspective or the management perspective as modified by the selected user or user group) who provided the data that the user to work with. For example, User A can look at the alternations to the base case made by User B and C individually, and at the alterations to the base case of Users B and C as a Group (e.g., Group 1, as represented in Figure 20 by the dotted line rectangle).

More particularly, each user, if authorized to do so, may choose to amend an "official" base case scenario, amend an official alternative scenario, or create their own alternative scenario. In addition, User A has the ability to view the combined changes made by a group of users – in this case, Users B and C. Further, User C may give permission for User A to review User C's customized scenarios. This functionality may limited to company insiders, or alternatively, made available to outsiders, and even, if the company uses the system 100 (Figure 1A) to report information externally, investment analysts. In the preferred embodiment, each user is able to make changes to his or her alternative scenarios, but may only view the alternative scenarios of another user without making changes.

To facilitate grouping of contributions, users are preferably assigned to various user groups when first accessing the system 100. These groups may be used when authorizing users and groups of users to view stored assumptions and to make changes to them.

If, in the state 720, the user selects the value creation capacity, then program flow moves to a state 726. In the state 726, the user may update information contained in the capacity matrix of the database 104 (Figure 1A). This may include, for example, updating the metrics for capabilities, infrastructure and networks or updating a specific capacity component. This may also include the user selecting a level of detail prior to updating information in the capacity matrix.

In the state 720, the user may also select updating the stakeholder matrix. In which case, program flow may move to a state 728. In the state 728, the user may update information contained in the stakeholder matrix of the database 104 (Figure 1A). This may include, for example, updating stakeholder metrics or receiving feedback from the stakeholder regarding the value creation performance of the business enterprise from his or her perspective. Updating performed in the state 728 may also include the stakeholder-user selecting a level of detail at

which the stakeholder information is presented and selecting a particular stakeholder perspective from among the various different stakeholders, prior to the user updating the information.

The system 100 (Figure 1A) may provide real-time data collection to encourage stakeholder-users to provide feedback on the performance of the organization from their perspective. Appropriate filters may be established to ensure that the data obtained is meaningful and representative. On-time performance can be used to illustrate the potential for direct performance feedback from stakeholders. Customers could be given the opportunity to provide their own feedback, from their perspective, on Company A's on-time performance. If their feedback confirmed the internal information maintained by the company, this feedback would serve the validate the calculations with respect to customer value creation. On the other hand, if the feedback from the customer stakeholders indicated significant differences from the company's internal information, this could be indicative of incorrect internal information, or alternative, incorrect perceptions on the part of customers. In either case, this information would alert Company A's management to the need for action to address the problem. Figure 21 illustrates various metrics for which feedback may be provided by users or stakeholders in accordance with the present invention.

From any of the states 722-728, program flow may move to the end state 718, terminating the session with the stakeholder-user. Alternately, program flow may return to the state 704.

Assuming the user selects the analysis sub-mode in the state 704, program flow moves to a state 730. In the state 730, the user may select one of the four perspectives on the business enterprise in which the user desires to work in the analysis mode. The analysis sub-mode provides an interface by which a stakeholder-user may assess the value creation performance of the business enterprise by reviewing the various matrices in the database 104 (Figure 1A), making changes (e.g., forming alternate scenarios) and, then, reviewing projected outcomes based upon the changes. Then, program flow may move from the state 730 to a state 732.

In the state 732, the stakeholder-user may select a level of detail in which the selected value creation information is presented. For example, the user may select a specific level in the assumptions hierarchy (assuming that the user has appropriate authorization). The user may also select to review information regarding the business enterprise as a whole or information regarding a specific value stream.

If the user selected the value creation and realization formula in the state 730, then program flow moves to a state 734. In the state 734, the user may then review information from the

value creation and realization formula matrix stored in the database 104 (Figure 1A). This may include, for example, reviewing the success criteria, key decisions, major premises, capacity components, information regarding key stakeholders, formula variance analysis information, benchmarking information and outcome displays in various formats.

Alternately, assuming that the user selected the value stream model in the state 730, then program flow moves to a state 736. In the state 736, the user may then review information from the event matrix which is stored in the database 104 (Figure 1A). This may include, for example, selecting a specific value stream, scenario or time period for analysis. This may also include reviewing event entries, assumptions, benchmarking information, outcome displays in various formats and outcomes. The outcomes reviewed in the state 736 may include, for example, present and future, financial and non-financial, value creation determinations, value destruction determinations, and outcome variance determinations.

If, in the state 730, the user selects the capacity matrix for analysis, program flow moves to a state 738. In the state 738, the user may then review information from the capacity matrix stored in the database 104 (Figure 1A). This may include, for example, selecting a specific capacity component (e.g., capabilities, infrastructure or networks). For each component, this may also include reviewing the associated metrics. In addition, in the state 738, the user may also review variance analysis, benchmarking and outcome displays in various formats for the capacity matrix.

Alternately, assuming that in the state 730, the user selects the stakeholder matrix for analysis, the user may review information from the stakeholder matrix. Accordingly, program flow may then move to a state 740. Analysis in the state 740 may include, for example, the user selecting a level of detail at which information regarding a stakeholder perspective is to be reviewed and selecting a specific stakeholder perspective from the several different stakeholder perspectives. Analysis in the state 740 may also include the user reviewing stakeholder metrics for the selected stakeholder perspectives. In addition the user may also review variance analysis, benchmarking and outcome displays in various formats for the stakeholder matrix.

Figure 22 illustrates an event/assumption filter 800 and calculation engine 802 for determining various different outcomes based on the stored assumptions of various users. In calculating future financial and non-financial value streams, the system may select from the relational database 104 (Figure 1A) entries that are tagged as contributed by the selected user or user group, and use those entries to feed into the calculation of financial and non-financial value streams and other non-financial outcomes.

As shown in Figure 22, an event/assumptions filter 800 may be used to select from the event matrix 400 (Figures 11-13) of the relational database 102 the appropriate events and related assumptions. In the case of Situation A, the events and assumptions selected by the filter 800 are the ones defined by management of the business enterprise and, thus, represent the base case scenario. These events and assumptions may then be submitted to the calculation engine 802, which applies the various formulas and methods described herein for determining financial and non-financial outcomes. Thus, the outcomes are per the events and assumptions as defined by management.

In the case of Situation B, the event/assumptions filter 800 may select management-defined events and assumptions, except in the case where User A has stored one or more alternative assumptions, in which case those alternative assumptions will be used. Thus, the outcomes determined by the engine 802 are per the events and assumptions defined by User A.

In the case of Situation C, the event/assumptions filter 800 may select management-defined events and assumptions, except in the case where any member of Group 1 has stored an alternative event or assumption, in which case those stored alternative event or assumptions will be used. Accordingly, the outcomes determined by the engine 802 are as per events and assumptions as defined by Group 1.

In cases where more than one member of Group1 has stored an alternative to a particular event or assumption, the default action of the event/assumptions filter 800 may be to select the stored alternative which represents the greatest difference from the management-defined event or assumption. The event/assumptions filter 800 may also be configured to use a calculated average or mean of stored events or assumptions for the selected group, and may be configured to prompt a user to make a specific selection among alternative stored events and assumptions. Further, the filter 800 may iterate through a number of calculations and produce a report showing a range of outcomes between the most pessimistic and most optimistic stored events and assumptions for the selected group.

Note that these selections and determinations may be done at different levels of detail, depending on the levels of detail is permitted to the user, as in state 702 (Figure 18), or which the user has selected, as in state 732 (Figure 18).

Situation D of Figure 22 represents determination of outcomes based on direct feedback recorded from stakeholders on performance. As mentioned, where authorized (as in state 702 of Figure 18), a stakeholder-user may be permitted to provide direct, real-time feedback to the enterprise on its performance with respect to that stakeholder's value creation expectations, as

in state 728 of Figure 18. For example, a stakeholder-user who is a customer that is authorized to provide direct performance feedback may have defined an expectation with respect to on-time performance. The system may determine an outcome for a future non-financial value stream with respect to on-time performance. An authorized stakeholder-user, in viewing the outcomes of the calculations with respect to on-time performance may also choose to substitute a different value, based on their own experience related to on-time performance, for the outcome that would otherwise be calculated by the system.

In this situation, the event/assumptions filter 800 may substitute the stakeholder-provided value, or where many stakeholders have provided feedback, may provide a sum or average (as appropriate) of the stakeholder-provided values, for the appropriate non-financial value streams. The calculation engine 802 may then determine financial and non-financial outcomes, as described herein based upon the stakeholder feedback.

From any of the states 732-740, program flow may move to the end state 718, terminating the session with the stakeholder-user. Alternately, program flow may return to the state 704 where the stakeholder-user may select another sub-mode of operation for the system 100 (Figure 1A).

Together, the update and analysis modes provide user interactivity to make changes and view the results. Accordingly, the system 100 (Figure 1A) may track user-defined assumptions and provide users with an ability to alter events and assumptions and see the impact of these changes on calculated outcomes for each group of stakeholders. Preferably, the stakeholder-users may record their altered assumptions so that their customized scenarios will be available for review on their next visit, or by other stakeholder users, and can be customized further.

In sum, several aspects of stakeholder-interactivity have been described including: a stakeholder-user storing events and assumptions that may be viewed and later modified on a subsequent visit; a stakeholder-user viewing the stored events and assumptions of other users or groups of users, and the outcomes of these stored events and assumptions, where authorized to do so; and management viewing a summary of stored events and assumptions to obtain the viewpoints of various groups of stakeholders regarding the management-defined events and assumptions. This may result in management reviewing and updating the management-defined events and assumptions as appropriate. In addition, a stakeholder-user may provide direct performance feedback to the enterprise on value creation performance. Management or other users may, in turn, determine the impact on calculated outcomes of substituting direct stakeholder feedback for the values otherwise calculated by the system 100 (Figure 1A).

Returning to Figure 18, assuming the stakeholder user selects the assurance sub-mode in the state 704, program flow moves to a state 742. The assurance sub-mode provides an interface by which stakeholder-users with assurance responsibilities may review results of various self-auditing routines and gather additional evidence necessary to support their attestation with respect to the value creation information. For example, this may include making sure there are no inconsistencies in the event matrix (e.g., inconsistent assumptions). In addition, this may include validating information in the database 104 (Figure 1A) by performing benchmarking by which the value creation performance of the business enterprise is compared against other enterprises in the same industry, or with similar characteristics.

In the state 742, the stakeholder-user may select an assurance template. For example, the assurance template may be downloadable from a centralized database and may contain pre-programmed self-auditing routines that may be performed by the system 100 (Figure 1A), and may also support the gathering of specific types of evidence to support an assurance opinion. From the state 742, program flow may move to a state 744. In the state 744, the user may select one of the four perspectives on the business enterprise upon which the user desires to obtain assurance-related information.

Then, if the user selects the formula matrix, program flow moves to a state 746 where selected assurance-related information may be obtained from, and selected assurance-related procedures, including self-auditing routines, may be applied to, the formula matrix in the database 104 (Figure 1A). Alternately, if the user selects the event matrix, program flow moves to a state 748 where selected assurance-related information may be obtained from, and selected assurance-related procedures, including self-auditing routines, may be applied to, the event matrix in the database 104 (Figure 1A). Assuming the user selects the capacity matrix, program flow moves to a state 750 where selected assurance-related information may be obtained from, and selected assurance-related procedures, including self-auditing routines, may be applied to, the capacity matrix. Alternately, if the user selects the stakeholder matrix, program flow moves to a state 752 where selected assurance-related information may be obtained from, and selected assurance-related procedures, including self-auditing routines, may be applied to, the stakeholder matrix.

From any of the states 746-752, program flow may move to the end state 718, terminating the session with the stakeholder-user. Alternately, program flow may return to the state 704 where the stakeholder-user may select another sub-mode of operation for the system 100 (Figure 1A).

Assuming the stakeholder user selects the reporting sub-mode in the state 704, program flow moves to a state 754. The reporting sub-mode is one embodiment of an interface by which a stakeholder-user may generate various outcome displays regarding the value creation or value realization performance of the business enterprise. This may include, for example, generating various value creation outcome displays, generating accounting outcome displays which comply with the various accounting standards of different countries or standards-establishing entities, or generating outcome displays in other generally-accepted formats. Those skilled in the art will recognize that other outcome display generation schemes may be contemplated. The generation of outcomes displays will be described in more detail below.

In the state 754, the stakeholder user may select a reporting template. For example, the reporting template may specify available types of report formats which may be generated by the system 100 (Figure 1A). From the state 754, program flow may move to a state 756. In the state 756, the user may select one of the four perspectives on the business enterprise from which the user desires to generate a report. Then, program flow moves to a state 758 where the user may select a specific reporting format from among several available formats.

From the state 758, program flow may move to a state 760 where selected outcome displays may be generated from the formula matrix in the database 104 (Figure 1A). Alternately, if the user selects the event matrix, program flow may move to a state 762 where selected outcome displays may be generated from the event matrix in the database 104 (Figure 1A). Assuming the user selects the capacity matrix, program flow may move to a state 764 where selected outcome displays may be generated from the capacity matrix. If the user selects the stakeholder matrix, program flow may move to a state 766 where selected outcome displays may be generated from the stakeholder matrix.

The foregoing has described operation of the system in value creation mode. A description of software architecture for operating in value realization mode to generate continuously updated outcome displays similar to those that might be generated by a traditional transaction-based accounting system follows below.

Figure 23 is a block diagrammatic view of a software architecture 900 for enabling the system 100 (Figure 1A) of the invention to operate in a value realization mode. The software architecture 900 may include a number of software modules 901-905, each of which controls the CPU 102 to perform certain functions, as explained herein. The event matrix module 901 stores data with respect to future and past events. The object database module 902 stores information about various data objects and the relationships among those data objects. The

value realization report selector module 903 enables a user to select among a number of alternative value realization outcome displays that the system is capable of generating. Based on the outcome displays selected by the user, the event/objects filter module 904 in combination with the calculation engine module 905 generates and displays the selected outcome displays. These modules will be described in more detail below.

Figure 24 is a diagrammatic view of the event matrix module 901 of Figure 23 illustrating an example of certain event attributes that may be utilized by the system while operating in value realization mode. Events in the event matrix 901 may be classified, for example, as future events 906a, and past events 906b. For each event in the matrix 901, information that may be recorded in the matrix 901 may include date information of initial entry of information into the matrix 907a, information identifying a user entering the information into the matrix 907b, date information of updating the information in the matrix 907c, information identifying a user entering updated information into the matrix 907d, assumption information 907e, event type information 907f, object relationship information 907g, and other information relating to an event record.

In Figure 24 multiple event records are illustrated. For example, several past event records 906b are recorded in the matrix 901. Past event 99-4127 is illustrated as being entered into the matrix 901 on July 2, 1999 by Alice C. Since the event has already occurred, it is a known order event and involved an order of 100 units of Product A by Customer A. Past event 99-4690 is illustrated as being entered into the matrix 901 on July 20, 1999. Since the event has already occurred, it is a known manufacture event and involved the manufacture of 100 units of Product A. Past event 99-5201 is illustrated as being entered into the matrix 901 on July 25, 1999 by John P. Since the event has already occurred, it is a known sale event and involved a sale of 100 units of Product A to Customer A. Past event 99-6374 is illustrated as being entered into the matrix 901 on August 20, 1999 by Alice C. Since the event has already occurred, it is a known payment event and involved a $5,000 cash payment by Customer A for the purchased units. Accordingly, the events for a particular stream of transactions can be recorded in the event matrix 901.

The event matrix 901 also records future events 906a, as shown in Figure 24. Future events 906a can be affected and updated accordingly by known event occurrences. For example, as shown in Figure 24, future event 99-0 is illustrated as being entered into the matrix 901 on January 1, 1999 as an assumed revenue event indicating 900,000 available units of Product A. After an order of 100 units was recorded in the event matrix 901 as described above, the future

assumed revenue event 99-0001 is illustrated as being entered updating the event 99-0 information accordingly; in this case, updating the amount of available units of Product A. Other event stream information may be similarly stored and updated in the event matrix 901.

Figures 25A-C are respective diagrammatic views of object records that may be stored in the above described object database module 902. Figure 25A is a diagrammatic view of a customer object record 908 that may be stored in the object database 902. Exemplary record fields for the customer object record 908 may include customer information, such as Name, Address, Contact information and other customer details, and event relationship identifiers that operate to dynamically link appropriate events stored in the event matrix 901 with particular object records stored in the object database 902. For example, in Figure 25A, the customer object record 908 is shown having appropriate dynamic event identifiers relating to the information pertaining to Customer A stored in the event matrix 901 described above with reference to Figure 24.

Figure 25B is a diagrammatic view of a product object record 909 that may be stored in the object database 902. Exemplary record fields for the product object record 909 may include product information, such as name, components, price, cost, and other product details, and event relationship identifiers that operate to dynamically link appropriate events stored in the event matrix 901 with particular object records stored in the object database 902. For example, in Figure 25B, the product object record 909 is shown having appropriate dynamic event identifiers relating to the information pertaining to Product A stored in the event matrix 901 described above with reference to Figure 24.

Figure 25C is a diagrammatic view of a financial object record 910 that may be stored in the object database 902. Exemplary record fields for the financial object record 910 may include cash information, such as bank name, address, contact information, and account number, and event relationship identifiers that operate to dynamically link appropriate events stored in the event matrix 901 with particular object records stored in the object database 902. For example, in Figure 25C, the financial object record 910 is shown having appropriate dynamic event identifiers relating to the information pertaining to payment events stored in the event matrix 901 described above with reference to Figure 24. Other object records can be created and the above are merely exemplary.

Figure 26 is a diagrammatic view illustrating interaction between the event matrix module 901 and the object database module 902 shown in Figure 23 for generating value realization outcome displays in accordance with the invention. This interaction can be illustrated by the

following example. Assume that Company A manufactures Products A and B. Assume also that Customer 1 is a customer of Company A. Consider the following illustrative event stream as follows: (a) Customer 1 places an order with Company A for 100 units of Product A at $50 each; (b) Company A completes the manufacture of the 100 units of Product A that were ordered, at a unit cost of $25 each; (c) the 100 units of Product A are shipped to Customer 1, and an invoice is issued by Company A to Customer 1 for $5,000; (d) Customer 1 remits payment to Company A in the amount of $5,000.

In describing how the value realization mode of the present invention processes this event stream, it is useful to draw a contrast between the present invention and a traditional transaction-based accounting system. In such a traditional transaction-based accounting system, this event stream would normally be represented by two transactions as follows:

On shipment of the goods, the following entry would be made in the books of account:

Dr. Accounts receivable $5,000

Cr. Sales $5,000

Dr. Cost of goods sold $2,500

Cr. Inventory $2,500

On receipt of payment for the goods, the following entry would be made in the books of account:

Dr. Cash $5,000

Cr. Accounts receivable $5,000

By contrast, in the value realization mode of the present invention, this event stream may be recorded by modifying the relationships among events and objects in the event matrix 901 and object database 902. For example, assuming that in the current year (i.e., 1999), event A may be assigned an identification number 99-4127, event B may be assigned an identification number 99-4690, event C may be assigned an identification number 99-5201, and event D may be assigned the identification number 99-6374.. These events are illustrated as being recorded in the event matrix 901 shown in Figure 24 and described above.

Accordingly, for example, upon the occurrence of event A (99-4127), the system 100 (Figure 1A) may record the particular event details of event A in the event matrix 901. The system 100 may also modify the attributes of the object record Customer A to include an event identifier reference to event A in the event matrix 901, and may modify the attributes of the object record

Product A to include an event identifier reference to event A in the event matrix 901. Similarly, upon the occurrence of event B (99-4690), the system 100 (Figure 1A) may modify the attributes of the object record Product A to include an event identifier reference to event B in the event matrix 901.

Upon the occurrence of event C (99-5201), the system 100 (Figure 1A) may modify the attributes of the object record Customer A to include an event identifier reference to event C in the event matrix 901, and may also modify the attributes of the object record Product A to include an event identifier to event C in the event matrix 901. Since in value creation mode the system 100 (Figure 1A) may have recorded as a future event that Customer A would purchase a certain quantity of goods from Company A, upon the occurrence of that known event (the purchase of some goods), the future event may be modified accordingly. Similarly, upon the occurrence of event D (99-6374) the system 100 (Figure 1A) may modify the attributes of the object record Customer A to include an event identifier reference to event D in the event matrix 901, and may modify the attributes of the financial object record Cash to include an event identifier reference to event D in the matrix 901.

Further assume that after event C, a user makes a request for a value realization outcome display from the system 100 (Figure 1A). Among the alternative outcome display formats presented to the user by the value realization report selector 906 (Figure 22) is an outcome display on the status of the object Accounts Receivable. Outcome display generation is described in more detail below.

In a traditional transaction-based accounting system, a report on the status of accounts receivable would be generated by printing out the accounts receivable subledger of the general ledger. In the value realization mode of the present invention, a report on the status of accounts receivable may be generated by applying an appropriate Event/Objects filter 904 to the event matrix 901 and passing the appropriate information to a calculation engine 905 as shown in Figure 27.

Thus, in accordance with the example given above, an event/objects filter module 904 may scan the customer record object attributes for each customer and the associated event matrix 901, selecting past events (i.e., known results) from the event matrix 901, select event identifier references for sales and payment event types (other event types can be selected depending on the report desired), and pass the selected event identifier references (and their associated information) to the calculation engine 905. The calculation engine 905 may, for each customer

object record, calculate the appropriate amounts related to each particular event and determine an accounts receivable report. The resulting outcome display may be presented to the user.

A similar procedure could be used to generate other value realization outcome displays, such as inventory status, sales summary, complete financial statements, and virtually any other report that is generated by a traditional transaction-based accounting system. For example, inventory status outcome displays can be generated by applying a filter that selects product object records, and filters purchase, manufacture and sales events, passing the filtered records to the calculation engine 905 for generating the value of the inventory. Similarly, a sales summary can be generated by applying a filter that selects customer object records and filters sales events for a particular period, passing the relevant information to the calculation engine 905 for generating the value of sales for the specific time period. Other outcome displays may be generated using a similar technique of filtering relevant information.

Complete financial statements as of specified time in accordance with generally-accepted accounting principles may be generated, for example by applying associated filters to summarize the various events and object relationships that comprise the balance sheet and the income statement, and a calculation engine that incorporates within it the rules and conventions embodied in GAAP as currently defined by the relevant authorities.

Note that the system 100 (Figure 1A) can be configured such that an updated version of any selected outcome display report can be created whenever an event takes place. That is, the process of applying the appropriate event/object filter and applying the calculation engine can be made to be continuous, updating the result based on each new event. Consequently, the system 100 can therefore be described as capable of producing continuously updated value realization outcome displays.

An advantageous difference between the value realization mode of the present invention and a traditional transaction-based accounting system is that in the present invention the relationships among events and objects are a central focus of the system. In the event-based system 100 (Figure 1A) objects may include customers, products available for sale, financial objects, such as cash, etc. Objects such as these are in effect constants; what changes is the relationships among them and the events in the event matrix 901. As events take place, the system redefines these relationships.

By contrast, in a traditional transaction-based accounting system, what is central is the transactions as they are recorded in the various journals and subledgers. All processing is built around transactions, combining them in various ways.

The foregoing demonstrates that the same event-based system architecture can be deployed in value creation mode to generate outcome displays that provide a forward-looking perspective on value creation performance of a business enterprise, and in value realization mode to provide a historical perspective on value realization performance of a business enterprise. A traditional transaction-based accounting system, however, is only capable of generating outcome displays on historical value realization. Combining the capability to generate value creation and value realization information from a single system provides an important benefit to business enterprises.

Figure 28 illustrates an example of an alternative scheme for generating outcome displays using an outcome display interface for formatting customized outcome displays based on choices made by a stakeholder-user using the invention. As shown in Figure 28, choices relating to reporting mode may be selected by a user. Choices available may include value creation mode 1001, value realization mode 1002, or alternative reporting mode 1003. If a stakeholder-user selects value creation mode 1001, a user may select a reporting view that the stakeholder-user wishes to access 1004. Choices available to the stakeholder-user may include value creation/value realization formula, value stream model, value creation capacity, or value creation for multiple stakeholders. Other choices may also be available and the above are merely exemplary.

The user may also select value stream reporting options 1005. Available choices may include viewing a single value stream, in which case the options may include each value stream in the system, or viewing the value streams aggregated by technology, geography, or organizational unit. Other options may also be available and the above are merely exemplary.

A user may also select stakeholder perspective reporting options 1006. Choices within stakeholder perspective include customer perspective, employee perspective, supplier/business partner perspective, community/society perspective, shareholder perspective, or other stakeholder perspectives as may be available in the system.

A user may also select whether the system is operating in vision view versus performance tracking view 1007. In the case of vision view, the stakeholder-user may be asked to select one or more scenarios from a list of future scenarios that are available for comparison. The system may calculate outcomes for the chosen scenarios as described herein. In the case of performance tracking view, the user may specify any dates for generating a view. The system may calculate outcomes based on the events occurring between those time periods as described herein.

A user may also select different assumptions that the shareholder-user wishes to access 1008. Choices include viewing outcomes reflecting the official management events and assumptions, viewing results reflecting the changes to events and assumptions made by one or more specified users, and viewing the changes to events and assumptions made by one or more specified groups. Other selectable assumptions may also be available and the above are merely exemplary.

A user may also choose the level of detail that the stakeholder-user wishes to view 1009. Choices may include a range of levels of detail between the highest (Level 1) view (minimum detail) to the lowest (Level 5) view (maximum detail). Users may make any of the above selections by interacting with the system 100, such as, for example, by selecting from available choices using a touchscreen or other interactive display device, or by selecting from available menus using an I/O device. Based on all of the foregoing choices, the system 100 (Figure 1A) may select the most appropriate event/assumption filter 904 from among all the available value creation mode filters. Additionally, the system 100 (Figure 1A) may select the most appropriate calculation engine 905 from among all of the available value creation mode calculation engines. For example, one of the calculation engines may contain the formula needed to generate a value stream model from a customer perspective. The selected filter 904 and calculation engine 905 may then generate the desired outcome display in accordance with the stakeholder-user choices, as described above. The outcome display reflects results based on all the events in the system 100 that match the chosen filter. Furthermore, as long as the user wishes to continue viewing a particular outcome display, the outcomes can be updated in real-time based on the occurrence of any additional events that fall within the parameters established by the event/assumption filter.

If the stakeholder-user chooses value realization mode from the different reporting modes, the user may select from different report formats that the user wishes to access 1010. Report format choices may include financial statements, financial outcome displays (which may include a variety of reports relating to assets, liabilities, revenues or expenses), shareholder value reports, or other value realization related reports as are available in the system.

A user may also select organizational unit outcome displays 1011. Available organizational unit outcome displays may include viewing outcome displays relevant to a particular department, business unit, division, other structure, or the overall corporation as a whole. Other reports may also be available and the above are merely exemplary.

A user may also select different accounting standards to use for report generation 1012. Available standards may include that applicable to a particular country - e.g., U.S. GAAP, Canadian GAAP, etc., or that using international GAAP. Other standards may also be selected.

A user may also select time period criteria for reporting 1013. The stakeholder-user may select from different dates to generate outcome displays. Another available selection relates to the level of detail that the stakeholder-user wishes to view 1014. Choices may include a range of levels of detail between highest (Level 1) view (minimum detail) to lowest (Level 5) detail (maximum detail). As described above, users may make any of the above selections by interacting with the system 100, such as, for example, by selecting from available choices using a touchscreen or other interactive display device, or by selecting from available menus using an I/O device. Based on all of the foregoing choices, the system 100 may select the most appropriate event/object filter 904 from among all the available value realization mode filters. In addition, the system 100 may select the most appropriate calculation engine 905 from among all the available value realization mode calculation engines. For example, one of the calculation engines may contain the formulae that are necessary for generating a traditional accounting financial statement. The selected filter 904 and calculation engine 905 may then be used to generate the outcome display in accordance with the stakeholder-user choices. The outcome display reflects results based on all the events in the system that match the chosen filter. Furthermore, as long as the user wishes to continue viewing a particular outcome display, the outcomes can be updated in real-time based on the occurrence of any additional events that fall within the parameters established by the event/object filter.

If the stakeholder-user selects the alternative reporting mode, the user may select a reporting format that the stakeholder-user wishes to access 1015. Available choices may include a balanced scorecard report, a report in accordance with the guidelines of the global reporting initiative, a report in accordance with the format developed by Skandia (called the Skandia Navigator), a management discussion and analysis report (MD&A), or any other generally accepted reporting format which is available in the system.

The user may also select to generate a report for a particular organizational unit 1016, such as reports relevant to a particular department, business unit, division, other structure, or the overall corporation as a whole. Another choice relates to time period 1017. The stakeholder-user may select particular dates to generate outcome displays.

The user may also select the level of detail that the stakeholder-user wishes to view 1018. Available choices include a range of levels of detail between the highest (Level 1) view

(minimum detail) and the lowest (Level 5) view (maximum detail). Users may make any of the above selections by interacting with the system 100, such as, for example, by selecting from available choices using a touchscreen or other interactive display device, or by selecting from available menus using an I/O device. Based on all of the foregoing choices, the system 100 (Figure 1A) may select the most appropriate event/object filter 904 from among all of the available alternative reporting mode filters and may select the most appropriate calculation engine 905 from among all of the available alternative reporting calculation engines. For example, one of the calculation engines may contain the formulae that are necessary for generating a balanced scorecard report.

The selected filter 904 and calculation engine 905 may be used to generate the outcome display in accordance with the stakeholder-user choices. The outcome display reflects results based on all of the events in the system that match the chosen filter. Furthermore, as long as the user wishes to continue viewing the particular outcome display, the outcomes can be updated in real-time based on the occurrence of any additional events that fall within the parameters established by the event/object filter as described herein.

Figure 29 is a flow chart illustrating an exemplary method by which a customized assurance report on an outcome display may be generated in real time based on various automated procedures. Once a particular outcome display has been generated as described above, a stakeholder-user may make a choice as to whether the stakeholder-user wishes to view an assurance report (Step 1100). In some cases, they may also be able to choose among higher or lower levels of assurance.

Assuming a stakeholder-user chooses to view an assurance report, the system may perform a number of automated assurance procedures (Step 1101) to generate an assurance report. For example, the system may verify that the filter 904 and calculation engine 905 used to generate the outcome display are the appropriately associated given the stakeholder-user's outcome display parameter selections. The system may also verify the mathematical accuracy of the calculations performed by the calculation engine 905, and may verify that the outcome display information properly reflects any authoritative standards, such as U.S. GAAP or the like. The system may also verify the integrity of the underlying data in the database, through such procedures as event-assumption-object relationship tests, which ensure that all objects and assumptions are linked to events (and vice-versa), event-assumption-object consistency tests, which ensure that there are no inconsistencies between event-assumption or event-object relationships, assumptions limits tests, which ensure that all assumptions fall within limits

established when they were first established (i.e., a market share assumption would be set such that it could not exceed 100%), outcome limits tests, which ensure that the outcomes calculated by the system fall within reasonable limits established during system installation, data validation tests, which ensure that all data in the system fall within specified parameters, and other tests as applicable.

To provide an assurance report on an outcome display, a number of assurance procedures may be independently performed to verify the integrity of the information provided in the outcome display (Step 1102). This may be performed by an individual assurance provider, or alternatively, this functionality may be provided automatically in the system. Exemplary assurance procedures might consist of manual or automatic tests performed at various times throughout a year to test the accuracy of information in the company's database. In addition to these tests, software may execute in parallel with that running on a client computer network, allowing an assurance provider to perform a number of parallel automated procedures (Step 1103), such as those described above.

Assuming the stakeholder-user has selected to view an assurance report, the report may be generated (Step 1104) by the parallel software running on the assurance provider's network. Alternatively, the assurance report may be generated by the system itself. The assurance report may be assembled from a library of assurance report components in accordance with decision rules established by the assurance provider, and which will be described in more detail below. For example, assurance report components may include records relating to the level of assurance detail, records relating to the nature of the procedures performed, and records relating to the results of applying such procedures. The decision rules specify how the assurance report components are assembled. Assembly may be based on the choices made by the stakeholder-user in selecting the attributes of the outcome display they wish to review, the results of the automated assurance procedures performed by the client system, as noted above, the results of the manual assurance procedures previously undertaken by the assurance provider, the results of the parallel automated assurance procedures performed by the parallel system running on assurance provider's computer network, as noted above, as well as other alternatives.

Once the assurance report has been compiled it may be linked with the outcome display by means of a hyperlink feature (Step 1105), or other similar associating principle. This aids to ensure that the assurance report is provided independently to the stakeholder-user, and that there is no opportunity of alteration of the assurance report by the client.

Provided a stakeholder-user continues to view a particular outcome display on which the stakeholder-user has requested an assurance report, the above procedures may continue to be performed on an iterative basis (Step 1106) to ensure that the assurance report is updated to reflect the results of additional events as they occur.

To more clearly illustrate the decision rules described above, assume that a stakeholder-user makes the following outcome display selections to view a particular value creation outcome display, for example, using the interface described above with reference to Figure 28. Assume the stakeholder-user selects a value stream model, electing to view value stream A, from a shareholder's perspective, using performance tracking view for the past year, in accordance with management's official assumptions, at maximum detail, and requests an assurance report. Figure 30 illustrates exemplary assurance procedure decision rules that may be used to generate the assurance report for this example. Each decision rule may be associated with a first procedure (column 1200a) to be performed if the rule is satisfied, and a second procedure (column 1200b) to be performed if the rule is not satisfied. In accordance with these exemplary procedures, an assurance report can be generated for the outcome display being viewed providing a detailed analysis of the assurance procedure decision rules and indicating where assurance faults can be found in the generation of the outcome display information. The provided index of decision rules is complete enough to provide for all possible combinations of choices that a user might make in selecting an outcome display. Accordingly, the entire set of decision rules are available for assurance report processing; however, generally only those rules that are relevant to the particular outcome display are used by the system to generate the assurance report. This rule list is not exhaustive, and may be updated accordingly to include new rules or to change existing rules. Figure 31 illustrates exemplary assurance report components that may be presented in an assurance report requested by a stakeholder-user. The reporting components 1202 may depend on the results of the analysis performed using the assurance procedure decision rules described above. Accordingly, a stakeholder-user can receive an assurance report relating to the outcome display being viewed so as to more readily rely on the displayed data as being accurate assessments of value creation and/or value realization.

Among the assurance procedure and assurance reporting decision rules available are those related to generally-accepted performance reporting standards. For example, according to one or more assurance procedure decision rules, one or more assurance procedures may verify whether an outcome display is compiled in accordance with applicable measurement and

reporting standards defined by an authoritative standard-setting body. According to one or more related assurance reporting decision rules, an assurance report may then contain one or more components that report on the degree of compliance with the measurement and reporting standards. Such standards may relate to value realization, value creation, or other generally-accepted performance reporting approaches.

As examples of authoritative standard-setting bodies, value realization measurement and reporting standards are defined by the Financial Accounting Standards Board in the U.S., by he Accounting Standards Board of the Canadian Institute of Chartered Accountants in Canada, and internationally by the International Accounting Standards Committee. As standards emerge in the value creation space, they may be similarly embedded in assurance procedure and assurance reporting decision rules. Accordingly, a mechanism may be provided whereby assurance procedure and assurance reporting decision rules may be automatically updated to reflect the latest standards as defined by authoritative performance reporting standard-setting bodies.

Figure 32 is a flowchart illustrating a method for obtaining benchmarking information in real-time through a network of benchmarking service providers. As an example, referring to Figure 32, Client A wishes to obtain benchmarking information. The invention enables an authorized individual (Client A) to specify the information it wishes to benchmark (Step 1300). Exemplary information may include key assumptions in its value creation model that it wishes to compare with assumptions used by other companies, value creation or value realization outcomes in a defined area of its business operations compared with outcomes obtained by competitors with similar operations, value creation capacity compared with value creation capacity in other companies, and value created or realized for specific stakeholders compared with value created for similar stakeholders in comparable companies, or any other aspect of enterprise performance.

Based on the choices made by the authorized individual at Client A, an electronic benchmarking request may be generated by the system (Step 1301) and forwarded to a designated benchmarking service provider (Step 1302).

Upon receipt of the client request, specialized software at the benchmarking service provider may automatically forward a request for relevant benchmarking information to all of its clients who subscribe to the benchmarking service (Step 1303). Additionally, upon receipt of the client request, specialized software at the benchmarking service provider may automatically forward a request for relevant benchmarking information to all other benchmarking service providers in the network (Step 1304). Upon receipt of the request from the requesting

benchmarking service provider, specialized software at the other benchmarking service providers automatically forwards a request for relevant benchmarking information to all of their clients who subscribe to the benchmarking service (Step 1305). Accordingly, a client wishing to obtain benchmarking information is able to obtain comparative information from a larger number of comparable companies than is served by a single benchmarking service provider.

Upon receipt of a request from a benchmarking service provider for benchmarking information, a client system may automatically perform a search for relevant comparable information and automatically electronically forward this information to the requesting benchmarking service provider (Step 1306). Upon receiving the comparable information from one or more clients, the target benchmarking service provider(s) may automatically aggregate the comparable information received from one or more clients (Step 1307). The provider(s) may then electronically forward the aggregated information to the requesting benchmarking service provider (Step 1308).

Upon receiving the aggregated benchmarking information from the target benchmarking service providers, the requesting benchmarking service provider aggregates the aggregated information received with that received from its own clients (Step 1309) and forwards the resulting benchmarking information to Client A (Step 1310). The above process may be iteratively performed if a client wishes to access continually updated benchmarking information.

Alternatively, benchmarking service providers may agree to continuously pool and aggregate commonly requested benchmarking information in order to speed the response time of the system to client requests. Where the client request is for information that has been aggregated in this way, the request may be fulfilled from the continuously aggregated information.

While the foregoing has been with reference to particular embodiments of the invention, it will be appreciated by those skilled in the art that changes in these embodiments may be made without departing from the principles and spirit of the invention, the scope of which is defined by the appended claims.

CLAIMS

1. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable;

determining a first present value of the future financial value stream of the business enterprise by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money;

determining, in response to the occurrence or non-occurrence of one or more of the future events, whether one or more of the assumed variables have changed and whether the influenced future financial value stream has changed; and

determining a second present value of the future financial value stream taking into account the one or more assumed variables that changed in response to the occurrence or non-occurrence of the one or more of the future events.

2. The method according to claim 1, wherein determining the first present value further comprises adjusting the future financial value stream by an assessed probability that the influences on the future financial value stream will be realized, and determining the second present value further comprises adjusting the future financial value stream by an assessed probability that the influences on the future financial value stream will be realized taking into account an assessed probability that changed in response to the occurrence or non-occurrence of the one or more of the future events.

3. The method according to claim 1, wherein the future financial value stream is associated with activities of the business enterprise necessary to give rise to the events associated with the future financial value stream.

4. The method according to claim 1, further comprising:

determining a present value of the future financial value stream by aggregating influences on the future financial value stream attributable to past events; and

determining a reliability index that is indicative of relative magnitudes of the present value of the future financial value stream attributable to past events and the present value of the future financial value stream attributable to future events.

5. The method according to claim 1, wherein the events and assumed variables collectively form a base case scenario for the business enterprise, and the first present value of the future financial value stream is based upon the base case scenario, the method further comprising:

changing one or more of the assumed variables, to form an alternate scenario including the changed assumed variables;

determining the present value of the future financial value stream based upon the alternate scenario; and

comparing the present value of the future financial value stream based upon the alternate scenario to the first present value of the future financial value stream based upon the base case scenario.

6. The method according to claim 1, further comprising selecting a stakeholder perspective from among a plurality of stakeholder perspectives for determining the first and second present values of the future financial value stream.

7. The method according to claim 1, further comprising selecting two or more stakeholder perspectives from among a plurality of stakeholder perspectives for determining the first and second present values of the future financial value stream.

8. The method according to claim 1, wherein the first present value is determined with respect to a first date and the second present value is determined with respect to a second date, and the method further comprises:

determining a variance between the first present value and the second present value taking into account the time value of money between the first and second dates; and

attributing the variance between the first present value and the second present value to events that occurred between the first and second dates.

9. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including a plurality of future financial value streams, each future financial value stream having one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable;

determining a present value of each future financial value stream by aggregating the influences on the future financial value stream attributable to the assumed variables of the future financial value streams and adjusting the future financial value streams for a time value of money;

aggregating the present value of each future financial value stream to form a first aggregate present financial value of the plurality of future financial value streams;

determining, in response to the occurrence or non-occurrence of one or more of the future events for one or more of the future financial value streams, whether one or more of the assumed variables have changed and whether the influenced future financial value stream has changed; and

forming a second aggregate present value of the plurality of future financial value streams taking into account the one or more assumed variables that changed in response to the occurrence or non-occurrence of the one or more of the future events.

10. The method according to claim 9, wherein determining the present value of each future financial value stream further comprises adjusting the future financial value stream by an assessed probability that the influences on the future financial value stream will be realized.

11. The method according to claim 9, wherein each of the plurality of future financial value streams is associated with activities of the business enterprise necessary to give rise to the events associated with the corresponding future financial value stream.

12. The method according to claim 9, further comprising:

determining a present value of each of the plurality of future financial value streams by aggregating influences on each of the future financial value streams attributable to past transactions; and

determining a reliability index that is indicative of relative magnitudes of the second aggregate present value of the plurality of future financial value streams and an aggregation of present values of the plurality of future financial value streams attributable to past transactions.

13. The method according to claim 9, wherein the events and assumed variables for each of the plurality of future financial value streams collectively form a base case scenario for the business enterprise, and the first aggregate present value of the plurality of future financial value streams is based upon the base case scenario, the method further comprising:

changing one or more of the assumed variables, to form an alternate scenario including the changed assumed variables;

determining an aggregate present value of the plurality of future financial value streams based upon the alternate scenario; and

comparing the aggregate present value of the plurality of future financial value streams based upon the alternate scenario to the first aggregate present value of the plurality of future financial value streams based upon the base case scenario.

14. The method according to claim 9 further comprising selecting a stakeholder perspective from among a plurality of stakeholder perspectives for determining the first and second aggregate present value of the plurality of future financial value streams.

15. The method according to claim 9, further comprising selecting two or more stakeholder perspectives from among a plurality of stakeholder perspectives for determining the first and second aggregate present value of the plurality of future financial value streams.

16. The method according to claim 9, wherein the first aggregate present value is determined with respect to a first date and the second aggregate present value is determined with respect to a second date, and the method further comprises:

determining a variance between the first aggregate present value and the second aggregate present value taking into account the time value of money between the first and second dates; and

attributing the variance between the first aggregate present value and the second aggregate present value to events that occurred between the first and second dates.

17. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable;

determining a first present value of the future financial value stream of the business enterprise as of a first specified date by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money;

determining a second present value of the future financial value stream of the business enterprise as of a second specified date by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money;

determining a variance between the first present value and the second present value taking into account a time value of money between the first and second dates; and

attributing the variance between the first present value and the second present value to events that occurred between the first and second specified dates.

18. The method according to claim 17, wherein determining a first present value further comprises adjusting the future financial value stream by an assessed probability that the influences on the future financial value stream will be realized, and determining the second present value further comprises adjusting the future financial value stream by an assessed probability that the influences on the future financial value stream will be realized.

19. The method according to claim 17, further comprising selecting a stakeholder perspective from among a plurality of stakeholder perspectives for determining the first and second present values of the future financial value stream.

20. The method according to claim 17, further comprising:

determining a present value of each of a plurality of additional future financial value streams; and

aggregating the present value of the future financial value stream and the plurality of additional future financial value streams to form an aggregate present financial value of future financial values streams

21. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

selecting a stakeholder perspective from among a plurality of stakeholder perspectives for determining a present value of a future financial value stream of the business enterprise;

developing a data structure including one or more assumed variables that have an influence on the future financial value stream of the business enterprise from the perspective of the selected stakeholder and at least one future or past event for each assumed variable that influences the corresponding assumption; and

determining a present value of the future financial value stream of the business enterprise from the perspective of the selected stakeholder by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money.

22. The method according to claim 21, wherein determining the present value further comprises adjusting the future financial value stream by an assessed probability that the influences on the future financial value stream will be realized.

23. The method according to claim 21, wherein the future financial value stream is associated with activities of the business enterprise necessary to give rise to the events associated with the future financial value stream.

24. The method according to claim 21, further comprising selecting one or more additional stakeholder perspectives from among the plurality of stakeholder perspectives for determining the first present value of the future financial value stream.

25. The method according to claim 21, further comprising:

determining a present value of the future financial value stream by aggregating influences on the future financial value stream attributable to past events; and

determining a reliability index that is indicative of relative magnitudes of the present value of the future financial value stream attributable to past events and the present value of the future financial value stream attributable to future events.

26. The method according to claim 21, wherein the events and assumed variables collectively form a base case scenario for the business enterprise, and the present value of the future financial value stream is based upon the base case scenario, the method further comprising:

changing one or more of the assumed variables, to form an alternate scenario including the changed assumed variables;

determining the present value of the future financial value stream based upon the alternate scenario; and

comparing the present value of the future financial value stream based upon the alternate scenario to the first present value of the future financial value stream based upon the base case scenario.

27. The method according to claim 21, further comprising:

determining a present value of each of a plurality of additional future financial value streams from the perspective of the selected stakeholder; and

aggregating the present value of the future financial value stream and the plurality of additional future financial value streams to form an aggregate present financial value of future financial values streams.

28. The method according to claim 21, further comprising repeatedly determining and presenting a series of updated present values of the future financial value stream, each updated present value determined from the events and assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more of the future events.

29. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable;

identifying and segregating risks specific to the future financial value stream from risks specific to the business enterprise or industry as a whole;

assigning probabilities to the events or assumed variables based on the identified risks;

determining a first present value of the future financial value stream of the business enterprise by aggregating the influences on the future financial value stream attributable to the assumed variables, adjusting the future financial values stream by the assigned probabilities, and further adjusting the future financial value stream for a time value of money;

determining, in response to the occurrence or non-occurrence of one or more of the future events, whether one or more of the assumed variables have changed and whether the influenced future financial value stream has changed; and

determining a second present value of the future financial value stream taking into account the one or more assumed variables that changed in response to the occurrence or non-occurrence of the one or more of the future events.

30. The method according to claim 29, wherein the future financial value stream is associated with activities of the business enterprise necessary to give rise to the events associated with the future financial value stream.

31. The method according to claim 29, further comprising:

determining a present value of the future financial value stream by aggregating influences on the future financial value stream attributable to past events; and

determining a reliability index that is indicative of relative magnitudes of the present value of the future financial value stream attributable to past events and the present value of the future financial value stream attributable to future events.

32. The method according to claim 29, wherein the events and assumed variables collectively form a base case scenario for the business enterprise, and the first present value of the future financial value stream is based upon the base case scenario, the method further comprising:

changing one or more of the assumed variables, to form an alternate scenario including the changed assumed variables;

determining the present value of the future financial value stream based upon the alternate scenario; and

comparing the present value of the future financial value stream based upon the alternate scenario to the first present value of the future financial value stream based upon the base case scenario.

33. The method according to claim 29, further comprising selecting a stakeholder perspective from among a plurality of stakeholder perspectives for determining the first and second present values of the future financial value stream.

34. The method according to claim 29, further comprising selecting two or more stakeholder perspectives from among a plurality of stakeholder perspectives for determining the first and second present values of the future financial value stream.

35. The method according to claim 29, wherein the first present value is determined with respect to a first date and the second present value is determined with respect to a second date, and the method further comprises:

determining a variance between the first present value and the second present value taking into account the time value of money between the first and second dates; and

attributing the variance between the first present value and the second present value to events that occurred between the first and second specified dates.

36. The method according to claim 29, further comprising:

determining a present value of each of a plurality of additional future financial value streams; and

aggregating the present value of the first future financial value stream and the plurality of additional future financial value streams to form an aggregate present financial value of future financial values streams.

37. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable;

determining a present value of the future financial value stream of the business enterprise by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money, wherein the events and assumed variables collectively form a base case scenario for the business enterprise, and the first present value of the future financial value stream is based upon the base case scenario;

changing one or more of the assumed variables, to form an alternate scenario including the changed assumed variables;

determining the present value of the future financial value stream based upon the alternate scenario; and

comparing the present value of the future financial value stream based upon the alternate scenario to the first present value of the future financial value stream based upon the base case scenario.

38. The method according to claim 37, wherein determining the present value further comprises adjusting the future financial value stream by an assessed probability that the influences on the financial value stream will be realized.

39. The method according to claim 37, wherein the future financial value stream is associated with activities of the business enterprise necessary to give rise to the events associated with the future financial value stream.

40. The method according to claim 37, further comprising:

determining a present value of the future financial value stream by aggregating influences on the future financial value stream attributable to past events; and

determining a reliability index that is indicative of relative magnitudes of the present value of the future financial value stream attributable to past events and the present value of the future financial value stream attributable to future events.

41. The method according to claim 37, further comprising selecting a stakeholder perspective from among a plurality of stakeholder perspectives for determining the present value of the future financial value stream.

42. The method according to claim 37, further comprising selecting two or more stakeholder perspectives from among a plurality of stakeholder perspectives for determining the present value of the future financial value stream.

43. The method according to claim 37, further comprising:

determining a present value of each of a plurality of additional future financial value streams; and

aggregating the present value of the first future financial value stream and the plurality of additional future financial value streams to form an aggregate present financial value of future financial values streams.

44. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including one or more assumed variables that have an influence on a future financial value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variables;

determining a first present value of the future financial value stream of the business enterprise by aggregating the influences on the future financial value stream attributable to the assumed variables and adjusting the future financial value stream for a time value of money; and

repeatedly determining and presenting a series of updated present values of the future financial value stream, each updated present value determined from the events and assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more of the future events.

45. The method according to claim 44, wherein determining the first present value and determining each updated present value further comprise adjusting the future financial value stream by an assessed probability that the influences on the future financial value stream will be realized.

46. The method according to claim 44, wherein the future financial value stream is associated with activities of the business enterprise necessary to give rise to the events associated with the future financial value stream.

47. The method according to claim 44, further comprising:

determining a present value of the future financial value stream by aggregating influences on the future financial value stream attributable to past events; and

determining a reliability index that is indicative of relative magnitudes of the present value of the future financial value stream attributable to past events and the present value of the future financial value stream attributable to future events.

48. The method according to claim 44, wherein the events and assumed variables collectively form a base case scenario for the business enterprise, and the first present value of the future financial value stream is based upon the base case scenario, the method further comprising:

changing one or more of the assumed variables, to form an alternate scenario including the changed assumed variables;

determining the present value of the future financial value stream based upon the alternate scenario; and

comparing the present value of the future financial value stream based upon the alternate scenario to the first present value of the future financial value stream based upon the base case scenario.

49. The method according to claim 44, further comprising selecting a stakeholder perspective from among a plurality of stakeholder perspectives for determining the first and second present values of the future financial value stream.

50. The method according to claim 44, further comprising selecting two or more stakeholder perspectives from among a plurality of stakeholder perspectives for determining the first and second present values of the future financial value stream

51. The method according to claim 44, wherein the first present value is determined with respect to a first date and a selected one of the updated present values is determined with respect to a second date, and the method further comprises:

determining a variance between the first present value and the selected updated present value taking into account the time value of money between the first and second dates; and

attributing the variance between the first present value and the selected updated present value to events that occurred between the first and second dates.

52. The method according to claim 44, further comprising:

determining a present value of each of a plurality of additional future financial value streams; and

aggregating the present value of the first future financial value stream and the plurality of additional future financial value streams to form an aggregate present financial value of future financial values streams.

53. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including assumed variables that have an influence on a value stream of the business enterprise, the assumed variables in said data structure being arranged in a multi-level hierarchy in which assumed variables positioned at a lower level in the hierarchy influence one or more assumed variables positioned at a higher level in the hierarchy;

determining a first outcome for the financial value stream of the business enterprise based upon the assumed variables;

authorizing a user to alter one or more of the assumed variables according to a level of the hierarchy in which the assumed variables are positioned; and

determining a second outcome for the value stream of the business enterprise taking into account the altered assumed variables.

54. The method according to claim 53, wherein the first outcome includes a present financial value of the value stream.

55. The method according to claim 53, wherein the first outcome includes a non-financial metric.

56. The method according to claim 53, further comprising:

authorizing each of a plurality of users to alter the assumed variables according to a level of the hierarchy in which the assumed variables are positioned;

storing, for each altered assumed variable, an identification of the user who made the alteration; and

determining alternate outcomes for the value stream of the business enterprise taking into account selected aggregations of the altered assumed variables wherein the selected aggregations are formed according to the stored identifications.

57. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including a plurality of assumed variables that have an influence on a value stream of the business enterprise, the data structure having a portion which defines a base case scenario for the business enterprise;

determining an outcome for the value stream of the business enterprise based upon the assumed variables of the base case scenario;

altering, by a plurality of users, selected ones of the plurality of assumed variables;

storing each altered assumed variable in the data structure in association with an identifier of the user who made the alteration, and maintaining the assumed variables of the base case scenario unchanged by the plurality of users;

aggregating selected ones of the altered assumed variables and selected ones of the assumed variables of the base case scenario in accordance with the stored identifiers to form one or more alternate scenarios; and

determining an outcome for the value stream of the business enterprise based upon each of the alternate scenarios.

58. The method according to claim 57, wherein the assumed variables are arranged in a multi-level hierarchy in which assumed variables positioned at a lower level in the hierarchy influence one or more assumed variables positioned at a higher level in the hierarchy.

59. The method according to claim 58, wherein said altering further comprises authorizing each of the users to alter the assumed variables according to a level of the hierarchy in which the assumed variables are positioned.

60. The method according to claim 57, wherein the outcome of the base case scenario includes a present financial value of the value stream.

61. The method according to claim 60, wherein the outcome of the base case scenario includes a non-financial metric.

62. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including a plurality of assumed variables that have an influence on a value stream of the business enterprise, the data structure having a portion which defines a base case scenario for the business enterprise;

determining an outcome for the value stream of the business enterprise based upon the assumed variables of the base case scenario;

providing real-time feedback, by each of a plurality of users, on the value creation performance of the business enterprise;

storing the real-time feedback in the data structure in association with an identifier of the user who provided each portion of the feedback, and maintaining the assumed variables of the base case scenario unchanged by the plurality of users;

aggregating selected ones of the portions of the feedback and selected ones of the assumed variables of the base case scenario; and

determining an outcome for the value stream of the business enterprise based upon the selected ones of the portions of the feedback and the selected ones of the assumed variables of the base case scenario.

63. The method according to claim 62, wherein the assumed variables are arranged in a multi-level hierarchy in which assumed variables positioned at a lower level in the hierarchy influence one or more assumed variables positioned at a higher level in the hierarchy.

64. The method according to claim 62, wherein the outcome of the base case scenario includes a present financial value of the value stream.

65. The method according to claim 62, wherein the outcome of the base case scenario includes a non-financial metric.

66. A system for processing data relating to the performance of a business enterprise in creating value, comprising:

a memory device for storing a data structure including assumed variables that have an influence on a value stream of the business enterprise, the assumed variables in said data structure being arranged in a multi-level hierarchy in which assumed variables positioned at a lower level in the hierarchy influence one or more assumed variables positioned at a higher level in the hierarchy;

means for authorizing a user to alter one or more of the assumed variables according to a level of the hierarchy in which the assumed variables are positioned;

a filter for selecting certain ones of the assumed variables and for selecting certain ones of the altered assumed variables; and

a calculation engine for receiving the certain ones of the assumed variables and the certain ones of the altered assumed variables from the filter and for determining an outcome for the financial value stream of the business enterprise based upon the certain ones of the assumed variables and the certain ones of the altered assumed variables.

67. The system according to claim 664, wherein the outcome includes a present financial value of the value stream.

68. The system according to claim 66, wherein the outcome includes a non-financial metric.

69. The system according to claim 66, further comprising:

means for authorizing each of a plurality of users to alter the assumed variables according to a level of the hierarchy in which the assumed variables are positioned, wherein for each altered assumed variable, an identification of the user who made the alteration is stored in the data structure; and

means for determining alternate outcomes for the value stream of the business enterprise taking into account selected aggregations of the altered assumed variables wherein the selected aggregations are formed according to the stored identifications.

70. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including a plurality of assumed variables that have an influence on a value stream of the business enterprise and at least one future or past event for each assumed variable that influences the corresponding assumed variable, the data structure having a portion which defines a base case scenario for the business enterprise;

determining an outcome for the value stream of the business enterprise based upon the assumed variables and events of the base case scenario;

altering, by a plurality of users, selected ones of the plurality of assumed variables and selected ones of the events;

storing each altered assumed variable and each altered event in the data structure in association with an identifier of the user who made the alteration, and maintaining the assumed variables and events of the base case scenario unchanged by the plurality of users;

aggregating selected ones of the altered assumed variables and events along with selected ones of the assumed variables and events of the base case scenario in accordance with the stored identifiers to form one or more alternate scenarios; and

determining an outcome for the value stream of the business enterprise based upon each of the alternate scenarios.

71. The method according to claim 70, wherein the assumed variables are arranged in a multi-level hierarchy in which assumed variables positioned at a lower level in the hierarchy influence one or more assumed variables positioned at a higher level in the hierarchy.

72. The method according to claim 71, wherein said altering further comprises authorizing each of the users to alter the assumed variables according to a level of the hierarchy in which the assumed variables are positioned.

73. The method according to claim 70, wherein the outcome of the base case scenario includes a present financial value of the value stream.

74. The method according to claim 70, wherein the outcome of the base case scenario includes a non-financial metric.

75. A method of processing data relating to the performance of a business enterprise in creating value, comprising:

developing a data structure including a plurality of first assumed variables that have an influence on a non-financial value stream of the business enterprise and including a plurality of second assumed variables that have an influence on a financial value stream of the business enterprise;

determining a first outcome of the non-financial value stream of the business enterprise based upon the first assumed variables, the first outcome influencing at least one of the second assumed variables; and

determining a first present value of the financial value stream of the business enterprise based upon the first outcome and based upon the second assumed variables.

76. The method according to claim 76, wherein the first and second assumed variables are influenced by events, and wherein the method further comprises:

determining, in response to the occurrence or non-occurrence of one or more of the events, whether one or more of the first and second assumed variables have changed and whether the corresponding financial or non-financial value stream has changed; and

determining a second present value of the financial value stream taking into account the assumed variables that changed in response to the occurrence or non-occurrence of the one or more of the events.

77. The method according to claim 75, further comprising:

altering one or more of the first and second assumed variables; and

determining a second present value of the financial value stream taking into account the altered assumed variables.

78. The method according to claim 75, further comprising:

altering one or more of the first and second assumed variables; and

determining a second outcome of the non-financial value stream taking into account the altered assumed variables.

79. The method according to claim 75, wherein the first outcome includes a non-financial metric.

80. The method according to claim 75, further comprising selecting a stakeholder perspective from among a plurality of stakeholder perspectives for determining the first outcome and the first present value of the financial value stream.

81. The method according to claim 75, further comprising repeatedly determining a series of updated outcomes of the non-financial value stream of the business enterprise and a series of updated present values of the financial value stream of the business enterprise based upon and assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more events.

82. A system for processing data relating to the performance of a business enterprise in creating value, comprising:

a memory device for storing a data structure including a plurality of first assumed variables that have an influence on a non-financial value stream of the business enterprise and including a plurality of second assumed variables that have an influence on a financial value stream of the business enterprise; and

a calculation engine for a determining a first outcome of the non-financial value stream of the business enterprise based upon the first assumed variables, the first

outcome influencing at least one of the second assumed variables and the calculation engine for determining a first present value of the financial value stream of the business enterprise based upon the first outcome and based upon the second assumed variables.

83. The system according to claim 75, wherein the first outcome includes a non-financial metric.

84. The system according to claim 75, further comprising a filter coupled to the calculation engine for selecting certain ones of the first and second assumed variables to be delivered to the calculation engine.

85. The system according to claim 84, wherein each of the first and second assumed variables is stored in the data structure in association with identification of an originator of the corresponding assumed variable.

86. The system according to claim 85, wherein the filter selects the assumed variables to be delivered to the calculation engine according to the identifications stored in association with the assumed variables.

87. The method according to claim 84, wherein the filter selects a stakeholder perspective from among a plurality of stakeholder perspectives prior to providing first and second assumed variables to the calculation engine.

88. The system according to claim 82, wherein the calculation engine repeatedly determines a series of updated outcomes of the non-financial value stream of the business enterprise and a series of updated present values of the financial value stream of the business enterprise based upon and assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more events.

89. A method of generating an outcome display of data relating to the performance of a business enterprise in creating or realizing value, comprising:

receiving one or more reporting options relating to display criteria for formatting the outcome display of data;

selecting an event filter based on the received reporting options for filtering an event matrix in accordance with the reporting options and extracting information from the event matrix related to the received display criteria;

selecting a calculation engine based on the received reporting options and generating the outcome display information from the extracted information from the event matrix using appropriate calculation formulae associated with the calculation engine; and

presenting the resulting outcome display information.

90. The method of claim 89, wherein the event matrix includes one or more event entries relating to past and future events.

91. The method of claim 89, wherein the presenting step further comprises the step of continuously updating the outcome display information upon one or more events or related assumptions in the event matrix being updated to reflect an occurrence or non-occurrence of an event.

92. The method of claim 89, wherein the reporting options include a value creation outcome display, a value realization outcome display, and an alternative reporting outcome display.

93. The method of claim 92, wherein upon receiving reporting options for generating a value creation outcome display, further receiving reporting parameters relating to the display criteria for formatting the outcome display of data.

94. The method of claim 93, wherein the reporting parameters include reporting view type, value stream reporting options, stakeholder perspective reporting options, reporting view format, reporting assumption options, and reporting detail options.

95. The method of claim 94, wherein the reporting view type parameters include value creation/value realization formulae, value stream model, value creation capacity, and value creation for multiple stakeholders.

96. The method of claim 94, wherein the value stream reporting options include a single value stream, and an aggregated value stream.

97. The method of claim 96, wherein the aggregated value stream can be aggregated by technology specific parameters, geography specific parameters, and organizational unit specific parameters.

98. The method of claim 94, wherein the stakeholder perspective reporting options include customer perspective, employee perspective, supplier/business partner perspective, community/society perspective, shareholder perspective, and other stakeholder perspectives.

99. The method of claim 94, wherein the reporting view format includes vision view and performance tracking view.

100. The method of claim 99, wherein the vision view is a forward-looking view format and the performance tracking view is a backward-looking view format.

101. The method of claim 94, wherein the reporting assumption options include official event outcome assumptions, and user-modified event outcome assumptions.

102. The method of claim 101, wherein the official event outcome assumptions are associated with a particular company.

103. The method of claim 94, wherein the reporting detail options include a range of reporting view details, where more specific outcome display information is presented depending on the level of reporting view details selected.

104. The method of claim 92, wherein upon receiving reporting options for generating a value realization outcome display, further receiving reporting parameters relating to the display criteria for formatting the outcome display of data.

105. The method of claim 104, wherein the reporting parameters include reporting format type, organizational unit report options, accounting standard parameters, reporting period parameters, and reporting detail options.

106. The method of claim 105, wherein the reporting format type includes financial statements, financial reports, and shareholder value reports.

107. The method of claim 106, wherein the accounting standard parameters include country specific accounting standards.

108. The method of claim 105, wherein the accounting standard parameters include international accounting standards.

109. The method of claim 105, wherein the reporting period parameters include date and time information for constraining report criteria.

110. The method of claim 105, wherein the reporting detail options include a range of reporting view details, where more specific outcome display information is presented depending on the level of reporting view details selected.

111. The method of claim 92, wherein upon receiving reporting options for generating an alternative reporting outcome display, further receiving reporting parameters relating to the display criteria for formatting the outcome display of data.

112. The method of claim 111, wherein the reporting parameters include reporting format type, organizational unit report options, and reporting detail options.

113. The method of claim 112, wherein the reporting format type includes a balanced scorecard report, a report in accordance with guidelines related to environmental or social accountability, a report in accordance with a format developed for representing intellectual capital, a management discussion and analysis report, and other generally accepted alternative reporting formats.

114. The method of claim 112, wherein the reporting detail options include a range of reporting view details, where more specific outcome display information is presented depending on the level of reporting view details selected.

115. The method of claim 89, wherein the outcome displays can be presented electronically or in paper form.

116. A system for processing data relating to the performance of a business enterprise in creating value, comprising:

a memory device for storing a data structure including a plurality of first assumed variables that have an influence on a non-financial value stream of the business enterprise and including a plurality of second assumed variables that have an influence on a financial value stream of the business enterprise;

a calculation engine for determining a first outcome of the non-financial value stream of the business enterprise based upon events characterized by the first assumed variables, the first outcome influencing at least one of the second assumed variables and for determining a first present value of the financial value stream of the business enterprise based upon the first outcome and based upon the second assumed variables;

an outcome display module for selecting outcome display reporting parameters for generating reports from information stored in the memory device, the outcome display reporting parameters being associated with certain ones of the first and second assumed variables stored in the memory device; and

a filter coupled with the calculation engine for selecting those certain ones of the first and second assumed variables from the memory device to be delivered to the calculation engine.

117. The system according to claim 116, wherein present and future events are characterized by the first and second assumed variables.

118. The system according to claim 116, wherein the reports are generated electronically.

119. The system according to claim 116, wherein the reports are generated in paper form.

120. The system according to claim 116, wherein the first outcome includes a non-financial metric.

121. The system according to claim 116, wherein each of the first and second assumed variables is stored in the data structure in association with identification of an originator of the corresponding assumed variable.

122. The system according to claim 116, wherein the filter selects the assumed variables to be delivered to the calculation engine according to the identifications stored in association with the assumed variables.

123. The system according to claim 116, wherein the filter selects a stakeholder perspective from among a plurality of stakeholder perspectives prior to providing first and second assumed variables to the calculation engine.

124. The system according to claim 116, wherein the calculation engine repeatedly determines a series of updated outcomes of the non-financial value stream of the business enterprise and a series of updated present values of the financial value stream of the business enterprise based upon and assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more events.

125. A method for providing an assurance report on information relating to the performance of a business enterprise, comprising the steps of:

developing a data structure including information relating to the performance of the business enterprise;

specifying one or more reporting options relating to display criteria for formatting an outcome display of information corresponding to the performance of the business enterprise;

presenting the outcome display of information;

performing assurance procedures to verify the accuracy of the presented information; and

generating a resulting assurance report relating to the outcome display of information indicating the accuracy of the presented information.

126. The method of claim 125, wherein the data structure includes information relating to the value creation performance of the business enterprise.

127. The method of claim 125, wherein the data structure includes information relating to the value realization performance of the business enterprise.

128. The method of claim 125, wherein the data structure includes information relating to the performance of a business enterprise as measured by generally accepted alternative reporting formats.

129. The method of claim 125, wherein the presenting step comprises the steps of selecting an event filter based on the reporting options for filtering an event matrix in accordance with the reporting options and extracting information from the event matrix related to the received display criteria; selecting a calculation engine based on the reporting options and generating the outcome display information from the extracted information from the event matrix using appropriate calculation formulae associated with the calculation engine; and presenting the resulting outcome display information.

130. The method of claim 129, wherein the event matrix includes one or more event entries relating to past and future events.

131. The method of claim 129, wherein the presenting step further comprises the step of continuously updating the outcome display information upon one or more events or related assumptions in the event matrix being updated to reflect an occurrence or non-occurrence of an event.

132. The method of claim 125, wherein the performing step further comprises selecting one or more assurance procedures from a library of available assurance procedures for verifying the outcome display information in accordance with one or more established decision rules.

133. The method of claim 132, wherein the decision rules include assurance procedure decision rules and assurance reporting decision rules and respective ones of the assurance procedure and assurance reporting decision rules are associated with particular outcome displays that can be selected to view particular information relating to the performance of a business enterprise.

134. The method of claim 125, wherein the assurance procedures are performed in real-time.

135. The method of claim 125, wherein the assurance procedures are performed independently in parallel with generating the outcome display information.

136. The method of claim 125, wherein the generating the assurance report step further comprises aggregating results of performing one or more assurance procedures for verifying the accuracy of the outcome display information and generating the assurance report in accordance with those results.

137. The method of claim 125, wherein the assurance report is generated in real-time in accordance with the results of performing the assurance procedures.

138. The method of claim 137, wherein the assurance report is continuously updated upon one or more events or related assumptions in the event matrix being updated to reflect an occurrence or non-occurrence of an event relating to the outcome display information.

139. The method of claim 125, wherein the assurance report is generated by an assurance reporting module including a memory for storing one or more assurance procedures and one or more decision rules relating to the selection of assurance procedures, and wherein one or more of the assurance procedures are selected from the memory for verifying outcome display information in accordance with one or more of the established decision rules.

140. The method of claim 139, wherein the assurance reporting module further includes a memory for storing one or more assurance report components and one or more decision rules relating to the selection of the assurance report components for generating the assurance report.

141. The method of claim 139, wherein generally-accepted performance measurement and reporting standards are associated with the assurance procedure and assurance reporting decision rules.

142. The method of claim 141, wherein the generally-accepted performance measurement and reporting standards relate to value realization performance of a business enterprise.

143. The method of claim 141, wherein the generally-accepted performance measurement and reporting standards relate to value creation performance of a business enterprise.

144. The method of Claim 141, wherein the generally-accepted performance measurement and reporting standards relate to a generally-accepted approach for reporting on the performance of a business enterprise.

145. A system for providing an assurance report on information relating to the performance of a business enterprise, comprising:

a memory device for storing a data structure including a plurality of first assumed variables that have an influence on a non-financial value stream of the business enterprise and including a plurality of second assumed variables that have an influence on a financial value stream of the business enterprise;

a calculation engine for determining a first outcome of the non-financial value stream of the business enterprise based upon events characterized by the first assumed variables, the first outcome influencing at least one of the second assumed variables and for determining a first present value of the financial value stream of the business enterprise based upon the first outcome and based upon the second assumed variables;

an outcome display module for selecting outcome display reporting parameters for generating reports from information stored in the memory device, the outcome display reporting parameters being associated with certain ones of the first and second assumed variables stored in the memory device;

a filter coupled with the calculation engine for selecting those certain ones of the first and second assumed variables from the memory device to be delivered to the calculation engine; and

an assurance reporting module for generating an assurance report relating to a generated outcome display report to verify the accuracy of the outcome display report information.

146. The system according to claim 145, wherein present and future events are characterized by the first and second assumed variables.

147. The system according to claim 145, wherein the calculation engine repeatedly determines a series of updated outcomes of the non-financial value stream of the business enterprise and a series of updated present values of the financial value stream of the business enterprise based upon any assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more events.

148. The system of claim 145, wherein the assurance reporting module includes a memory for storing one or more assurance procedures and one or more decision rules relating to the selection of assurance procedures, and wherein one or more of the assurance procedures are selected from the memory for verifying the outcome display information in accordance with one or more of the established decision rules.

149. The system of claim 148, wherein the assurance reporting module further includes a memory for storing one or more assurance report components and one or more decision rules relating to the selection of the assurance report components for generating the assurance report.

150. The system of claim 148, wherein the decision rules include assurance procedure decision rules and assurance reporting decision rules and respective ones of the assurance procedure and assurance reporting decision rules are associated with particular outcome displays that can be selected to view particular information relating to the performance of the business enterprise.

151. The system of claim 149, wherein the decision rules include assurance procedure decision rules and assurance reporting decision rules and respective ones of the assurance procedure and assurance reporting decision rules are associated with particular outcome displays that can be selected to view particular information relating to the performance of the business enterprise.

152. The method of claim 148, wherein generally-accepted performance measurement and reporting standards are associated with the assurance procedure and assurance reporting decision rules.

153. The method of claim 148, wherein the generally-accepted performance measurement and reporting standards relate to value realization performance of a business enterprise.

154. The method of claim 148, wherein the generally-accepted performance measurement and reporting standards relate to value creation performance of a business enterprise.

155. The method of claim 148, wherein the generally-accepted performance measurement and reporting standards relate to a generally-accepted approach for reporting on the performance of a business enterprise.

156. The system of claim 148, wherein the assurance reporting module performs the assurance procedures in real-time.

157. The system of claim 148, wherein the assurance procedures are performed independently in parallel with generating the outcome display information.

158. The system of claim 145, wherein the assurance reporting module generates the assurance report by aggregating results of performing one or more assurance procedures for verifying the accuracy of the outcome display information and generating the assurance report in accordance with those results.

159. The system of claim 158, wherein the assurance report is generated in real-time in accordance with the results of performing the assurance procedures.

160. The system of claim 145, wherein the assurance report is continuously updated based upon any assumed variables in the data structure being changed in response to the occurrence or non-occurrence of one or more events.

161. A method for providing real-time benchmarking information relating to the performance of a business enterprise, comprising the steps of:

developing a data structure including information related to the performance of a business enterprise;

initiating a request for benchmarking information to a benchmarking network including one or more benchmarking service providers, each of the benchmarking service providers having one or more associated clients, the benchmarking service providers relaying the request for benchmarking information to their clients;

responding to the request for benchmarking information by providing relevant benchmarking information to the associated benchmarking service providers; and

aggregating the received benchmarking information to yield composite benchmark information relating to the performance of the business entity.

162. The method of claim 161, wherein the data structure includes information relating to the value creation performance of a business enterprise.

163. The method of claim 161, wherein the data structure includes information relating to the value realization performance of a business enterprise.

164. The method of claim 161, wherein the data structure includes information relating to the performance of a business enterprise as measured by generally accepted alternative performance reporting formats.

165. The method of claim 161, wherein the data structure includes a plurality of future and past events and related assumptions.

166. The method of claim 165, wherein the benchmarking request is repeatedly generated based on the occurrence of one or more events.

167. The method of claim 161, wherein the initiating step further comprises initiating a request for benchmarking information to a first benchmarking service provider, and relaying that request to the one or more additional benchmarking service providers in the benchmarking network.

168. The method of claim 167, wherein for each notified client, the responding step further comprises searching for relevant benchmarking information from associated data structures and providing the relevant benchmarking information to the associated benchmarking service providers.

169. The method of claim 168, wherein the aggregating step further comprises firstly aggregating by each of the associated benchmarking service providers the relevant benchmarking information from each of the responding client systems, providing the aggregated benchmarking information to the first benchmarking service provider, and secondly aggregating the aggregated benchmarking information with the relevant benchmarking information provided to the first benchmarking service provider from its client systems.

170. The method of claim 161, further comprising providing the composite benchmarking information to a requesting client system.

171. The method of claim 161, wherein the benchmarking information relates to value creation performance.

172. The method of claim 161, wherein the benchmarking information relates to value realization performance.

173. The method of claim 161, wherein the benchmarking information is continuously pooled and updated and wherein the response to the request includes providing relevant benchmarking information from the continuously pooled information.

174. A system for providing real-time benchmarking information relating to the performance of a business enterprise, comprising:

a memory device for storing a data structure including a plurality of first assumed variables that have an influence on a non-financial value stream of the business enterprise and including a plurality of second assumed variables that have an influence on a financial value stream of the business enterprise;

a calculation engine for determining a first outcome of the non-financial value stream of the business enterprise based upon events characterized by the first assumed variables, the first outcome influencing at least one of the second assumed variables and for determining a first present value of the financial value stream of the business enterprise based upon the first outcome and based upon the second assumed variables;

an outcome display module for selecting outcome display reporting parameters for generating reports from information stored in the memory device, the outcome display reporting parameters being associated with certain ones of the first and second assumed variables stored in the memory device;

a filter coupled with the calculation engine for selecting those certain ones of the first and second assumed variables from the memory device to be delivered to the calculation engine; and

a benchmarking module for providing benchmarking information relating to the comparable performance of a particular business enterprise with other business enterprises.

175. The system according to claim 174, wherein present and future events are characterized by the first and second assumed variables.

176. The system according to claim 174, wherein the calculation engine repeatedly determines a series of updated outcomes of the non-financial value stream of the business enterprise and a series of updated present values of the financial value stream of the business

enterprise based upon any assumed variables in the data structure including any assumed variables that have changed in response to the occurrence or non-occurrence of one or more events.

177. The system of claim 174, wherein the benchmarking information is provided in real-time and is continuously updated based upon any assumed variables in the data structure being changed in response to the occurrence or non-occurrence of one or more events.

178. The system of claim 174, wherein the benchmarking information relates to value creation performance.

179. The system of claim 174, wherein the benchmarking information relates to value realization performance.

180. The system of claim 174, wherein the benchmarking information is continuously pooled and updated and wherein the response to the request includes providing relevant benchmarking information from the continuously pooled information.

181. The method of claim 75, further comprising presenting the first outcome and the first present value, wherein a level of detail at which the first outcome and the first present value is presented is selectable by a user.

182. The system according to claim 82, further comprising means for presenting the first outcome and the first present value, wherein a level of detail at which the first outcome and the first present value is presented is selectable by a user.

ABSTRACT

A data processing system and method for assessing the value creating performance of a business enterprise. Continuously updated data regarding financial and non-financial value creation is provided from various different perspectives. These perspectives include an organization's value creation formula, the organization's value stream model, the organization's value creation capacity, which comprises capabilities, infrastructure and networks for generating value streams, and information about financial and non-financial value streams from the perspective of key stakeholders. The system provides a stakeholder-user with up-to-the-minute value creation information regarding the business enterprise. Stakeholder-users may review underlying assumptions, make alterations to the assumptions and see the results of value creation analysis based on those altered assumptions. In addition, stakeholder-users may contribute performance-related information reflecting their own experience with the enterprise for incorporation into the data regarding the value creation performance of the enterprise.

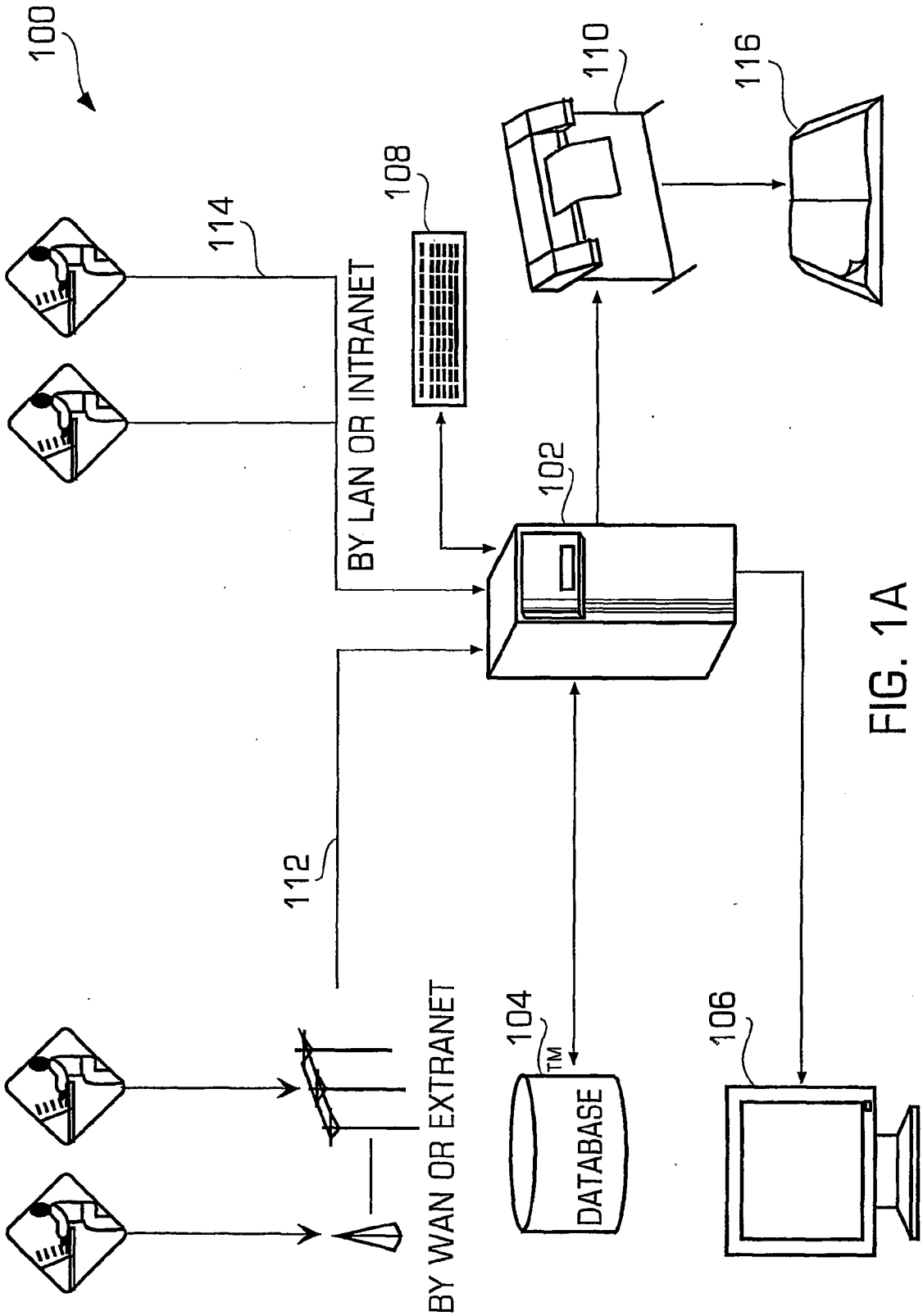

100
110
116
108
114
BY LAN OR INTRANET
102
112
104
TM
DATABASE
106
BY WAN OR EXTRANET

FIG. 1A

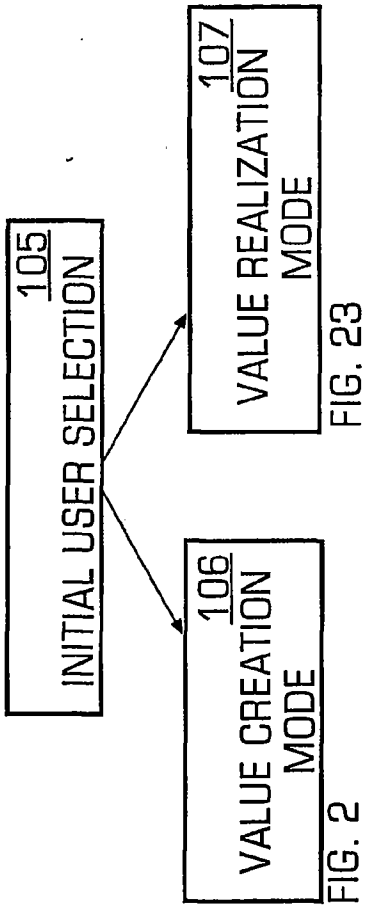

105
INITIAL USER SELECTION
106
VALUE CREATION MODE
FIG. 2
107
VALUE REALIZATION MODE
FIG. 23

FIG. 1B

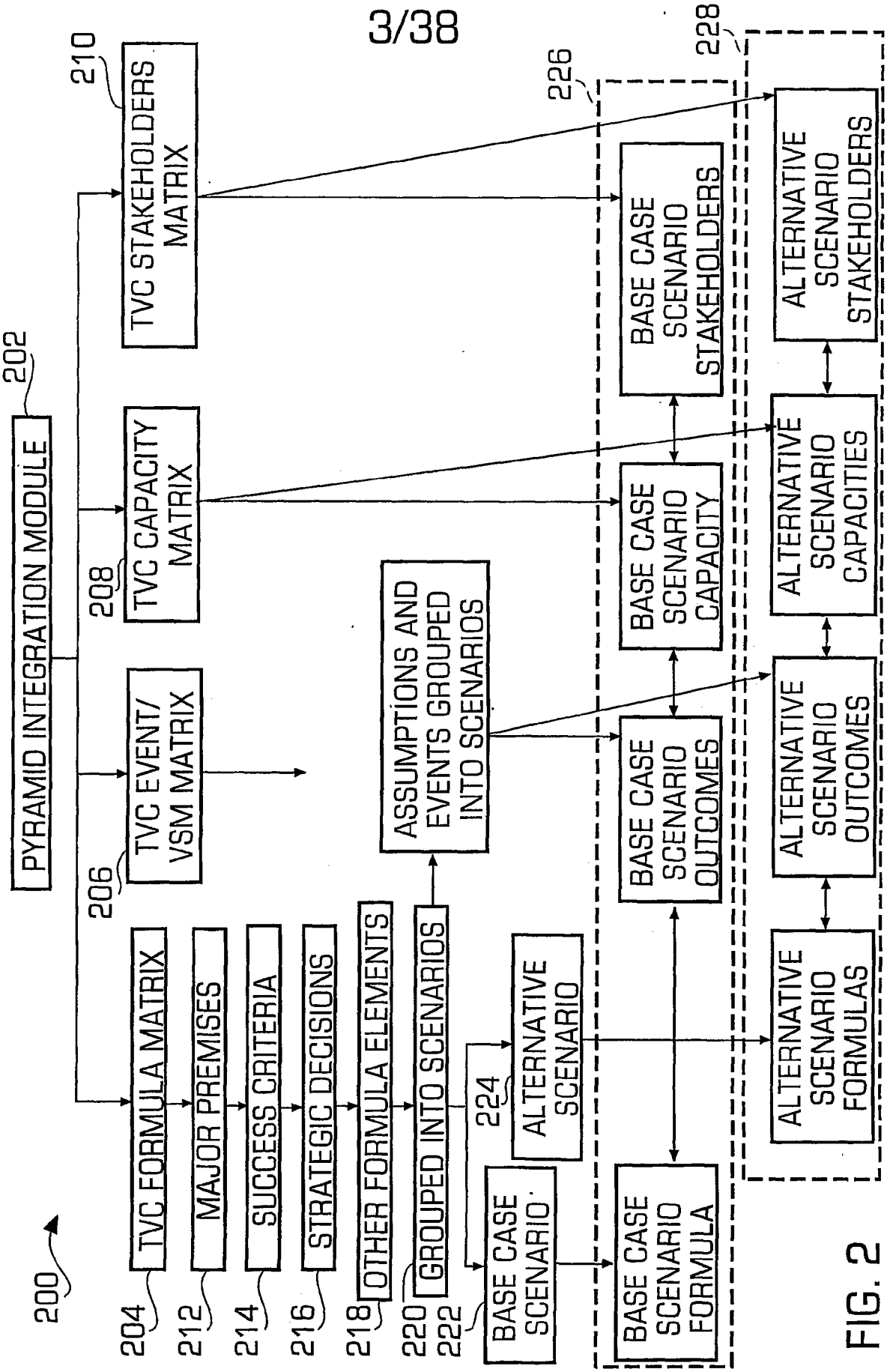

200
PYRAMID INTEGRATION MODULE
202
TVC STAKEHOLDERS MATRIX
210
TVC CAPACITY MATRIX
208
TVC EVENT/ VSM MATRIX
206
TVC FORMULA MATRIX
204
MAJOR PREMISES
212
SUCCESS CRITERIA
214
STRATEGIC DECISIONS
216
OTHER FORMULA ELEMENTS
218
GROUPED INTO SCENARIOS
220
ASSUMPTIONS AND EVENTS GROUPED INTO SCENARIOS
BASE CASE SCENARIO
222
ALTERNATIVE SCENARIO
224
226
228
BASE CASE SCENARIO STAKEHOLDERS
BASE CASE SCENARIO CAPACITY
BASE CASE SCENARIO OUTCOMES
BASE CASE SCENARIO FORMULA
ALTERNATIVE SCENARIO STAKEHOLDERS
ALTERNATIVE SCENARIO CAPACITIES
ALTERNATIVE SCENARIO OUTCOMES
ALTERNATIVE SCENARIO FORMULAS

FIG. 2

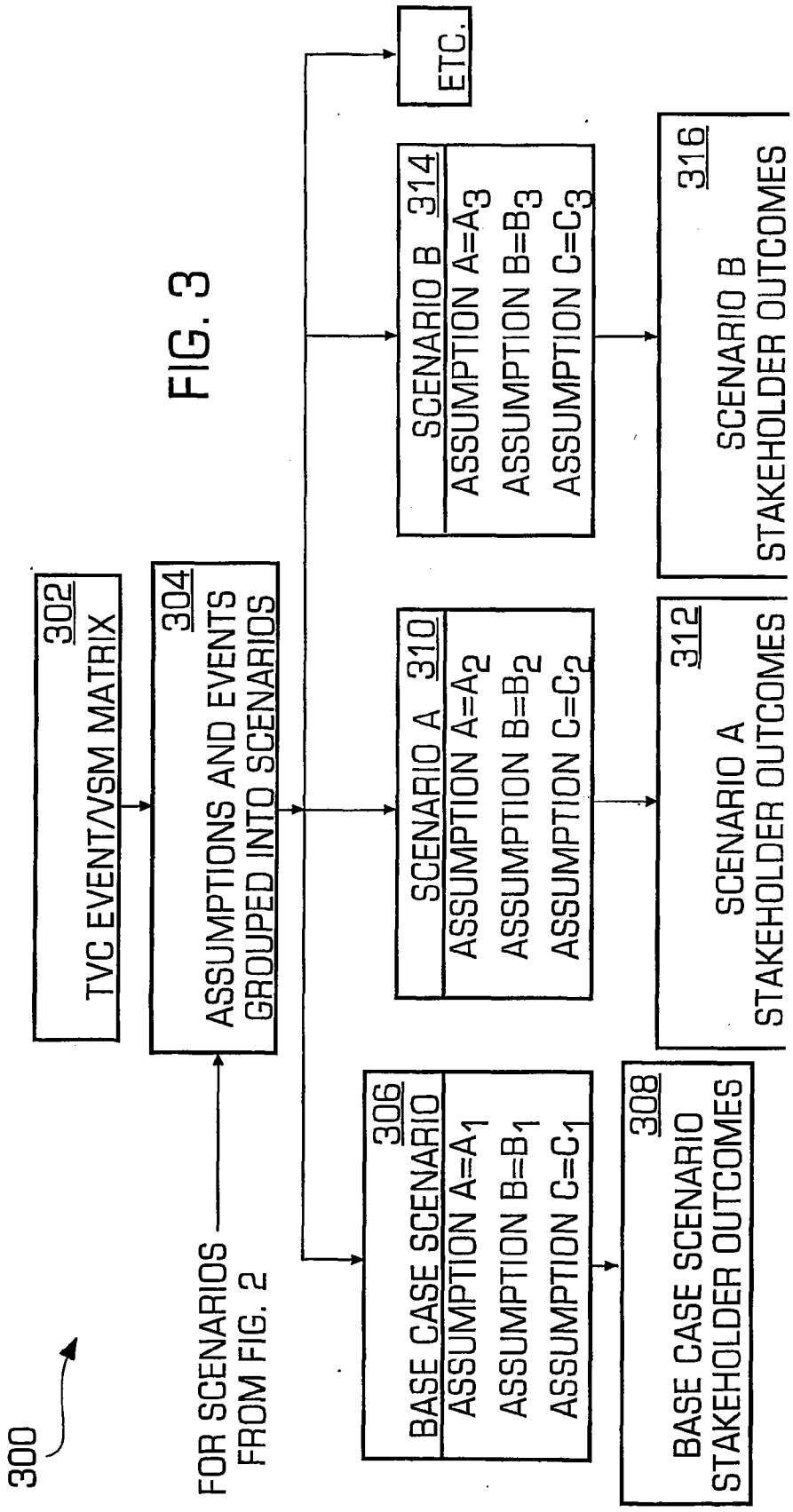

300
FOR SCENARIOS FROM FIG. 2
302
TVC EVENT/VSM MATRIX
304
ASSUMPTIONS AND EVENTS GROUPED INTO SCENARIOS
306
BASE CASE SCENARIO
ASSUMPTION A=A1
ASSUMPTION B=B1
ASSUMPTION C=C1
308
BASE CASE SCENARIO STAKEHOLDER OUTCOMES
SCENARIO A 310
ASSUMPTION A=A2
ASSUMPTION B=B2
ASSUMPTION C=C2
312
SCENARIO A STAKEHOLDER OUTCOMES
SCENARIO B 314
ASSUMPTION A=A3
ASSUMPTION B=B3
ASSUMPTION C=C3
316
SCENARIO B STAKEHOLDER OUTCOMES
ETC.

FIG. 3

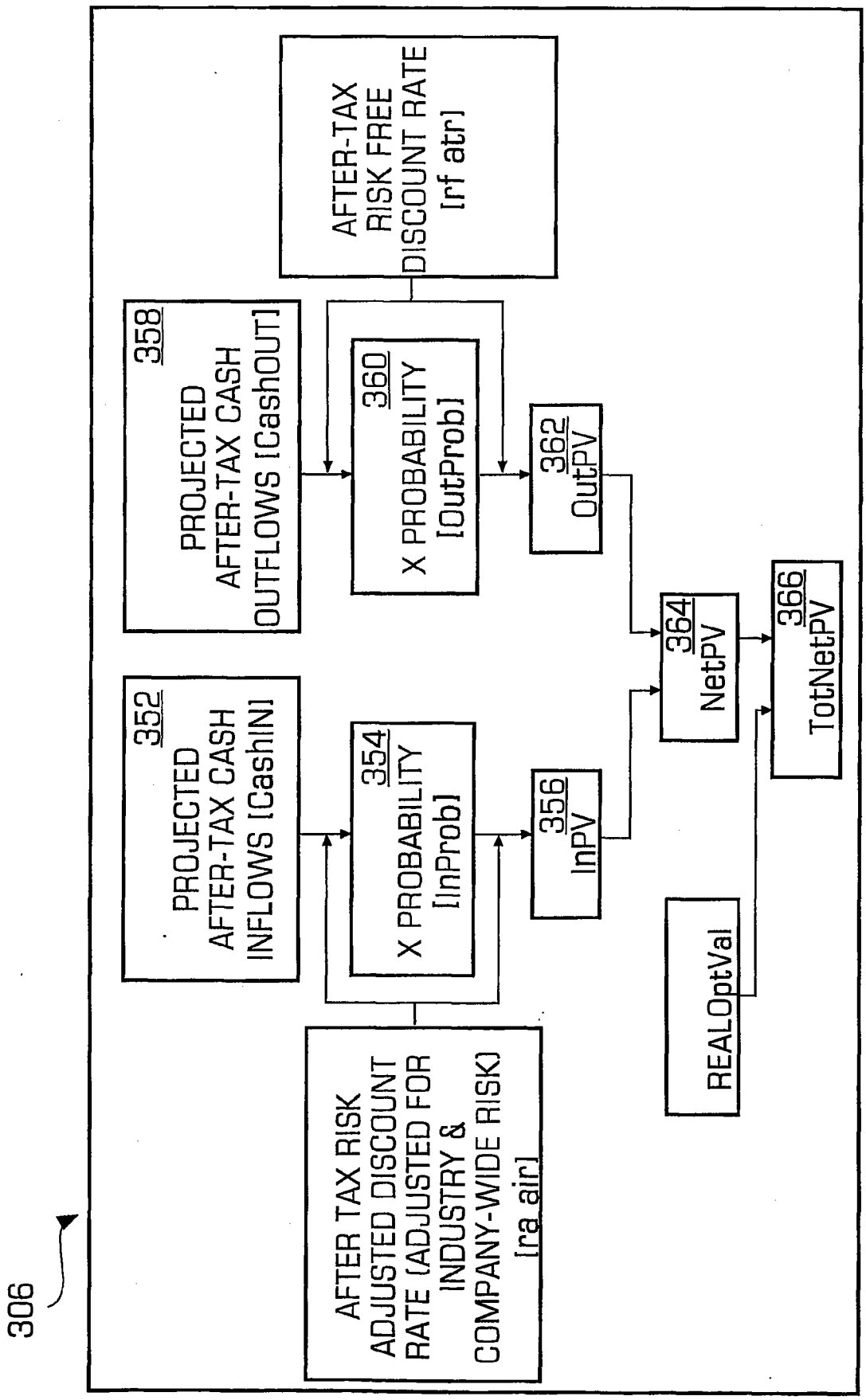

306
AFTER TAX RISK ADJUSTED DISCOUNT RATE (ADJUSTED FOR INDUSTRY & COMPANY-WIDE RISK) [ra air]
352 PROJECTED AFTER-TAX CASH INFLOWS [CashIN]
354 X PROBABILITY [InProb]
356 InPV
358 PROJECTED AFTER-TAX CASH OUTFLOWS [CashOUT]
360 X PROBABILITY [OutProb]
362 OutPV
AFTER-TAX RISK FREE DISCOUNT RATE [rf atr]
364 NetPV
366 TotNetPV
REALOptVal

FIG. 4

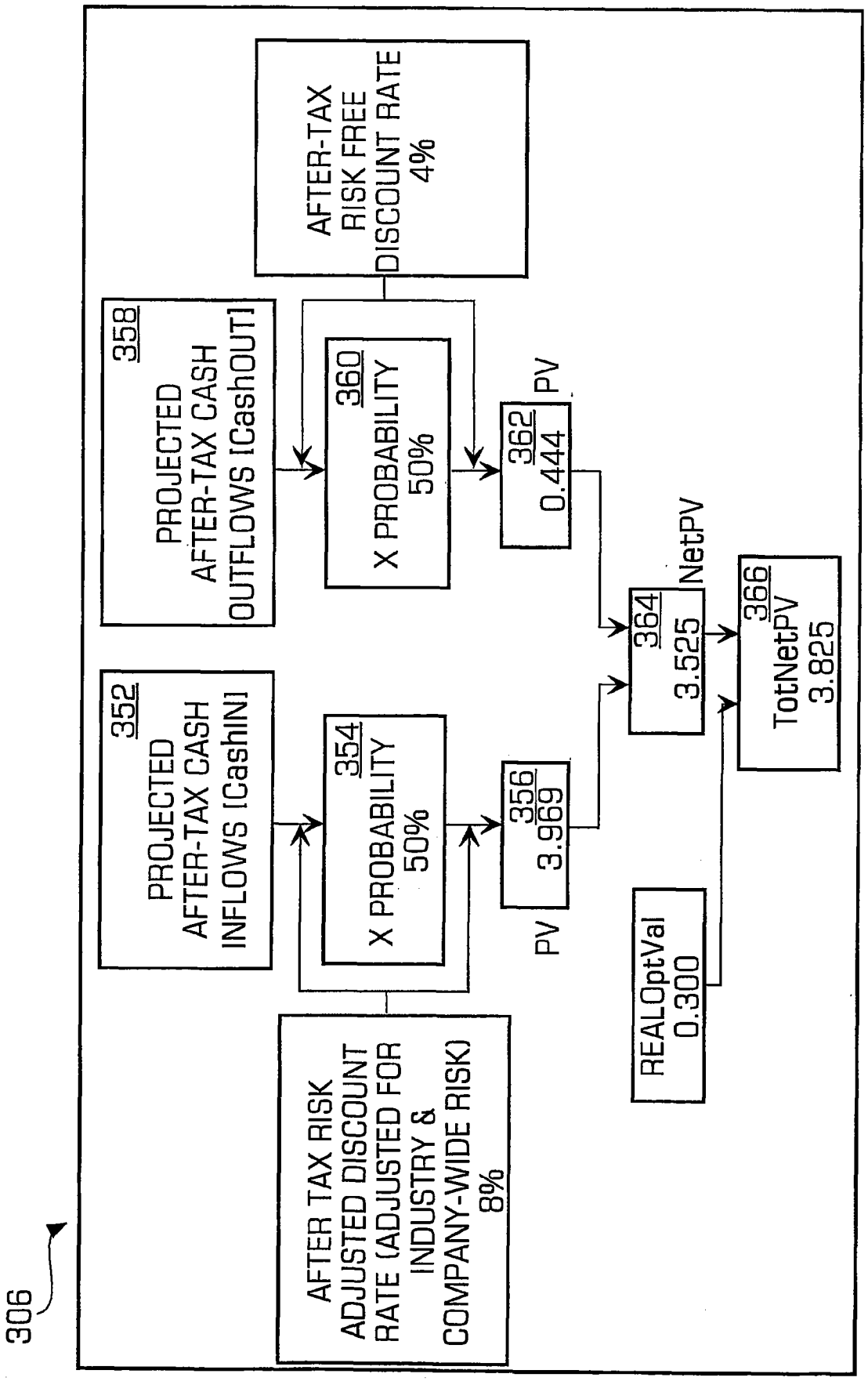

306
AFTER TAX RISK ADJUSTED DISCOUNT RATE (ADJUSTED FOR INDUSTRY & COMPANY-WIDE RISK) 8%
352
PROJECTED AFTER-TAX CASH INFLOWS (CashIN)
354
X PROBABILITY 50%
356
3.969
PV
358
PROJECTED AFTER-TAX CASH OUTFLOWS (CashOUT)
360
X PROBABILITY 50%
362
0.444
PV
AFTER-TAX RISK FREE DISCOUNT RATE 4%
364
3.525
NetPV
REALOptVal
0.300
366
TotNetPV
3.825

FIG. 5

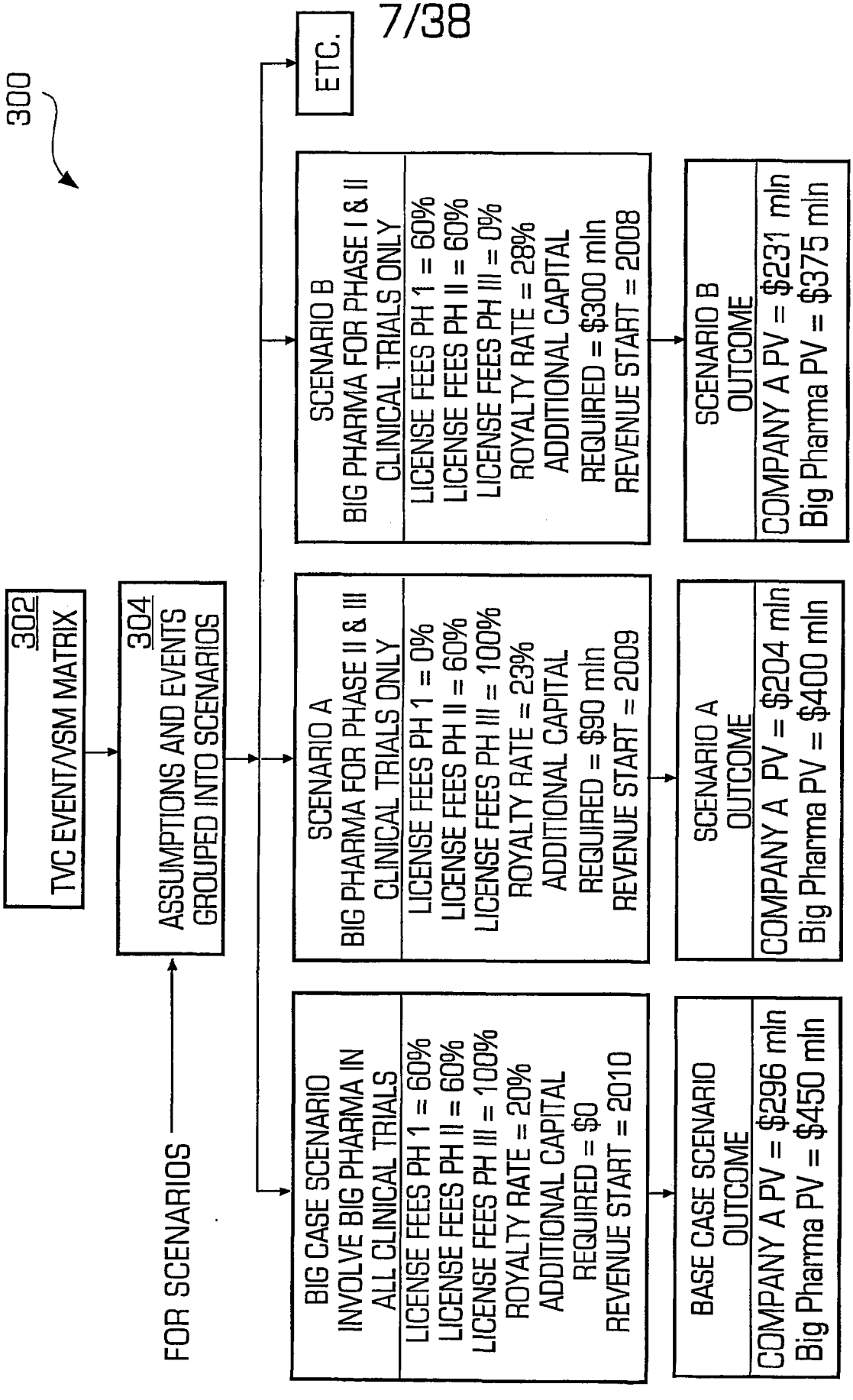

300
302
TVC EVENT/VSM MATRIX
304
ASSUMPTIONS AND EVENTS GROUPED INTO SCENARIOS
FOR SCENARIOS
BIG CASE SCENARIO
INVOLVE BIG PHARMA IN ALL CLINICAL TRIALS
LICENSE FEES PH 1 = 60%
LICENSE FEES PH II = 60%
LICENSE FEES PH III = 100%
ROYALTY RATE = 20%
ADDITIONAL CAPITAL REQUIRED = $0
REVENUE START = 2010
BASE CASE SCENARIO OUTCOME
COMPANY A PV = $296 mln
Big Pharma PV = $450 mln
SCENARIO A
BIG PHARMA FOR PHASE II & III CLINICAL TRIALS ONLY
LICENSE FEES PH 1 = 0%
LICENSE FEES PH II = 60%
LICENSE FEES PH III = 100%
ROYALTY RATE = 23%
ADDITIONAL CAPITAL REQUIRED = $90 mln
REVENUE START = 2009
SCENARIO A OUTCOME
COMPANY A PV = $204 mln
Big Pharma PV = $400 mln
SCENARIO B
BIG PHARMA FOR PHASE I & II CLINICAL TRIALS ONLY
LICENSE FEES PH 1 = 60%
LICENSE FEES PH II = 60%
LICENSE FEES PH III = 0%
ROYALTY RATE = 28%
ADDITIONAL CAPITAL REQUIRED = $300 mln
REVENUE START = 2008
SCENARIO B OUTCOME
COMPANY A PV = $231 mln
Big Pharma PV = $375 mln
ETC.

FIG. 6

FIG. 7

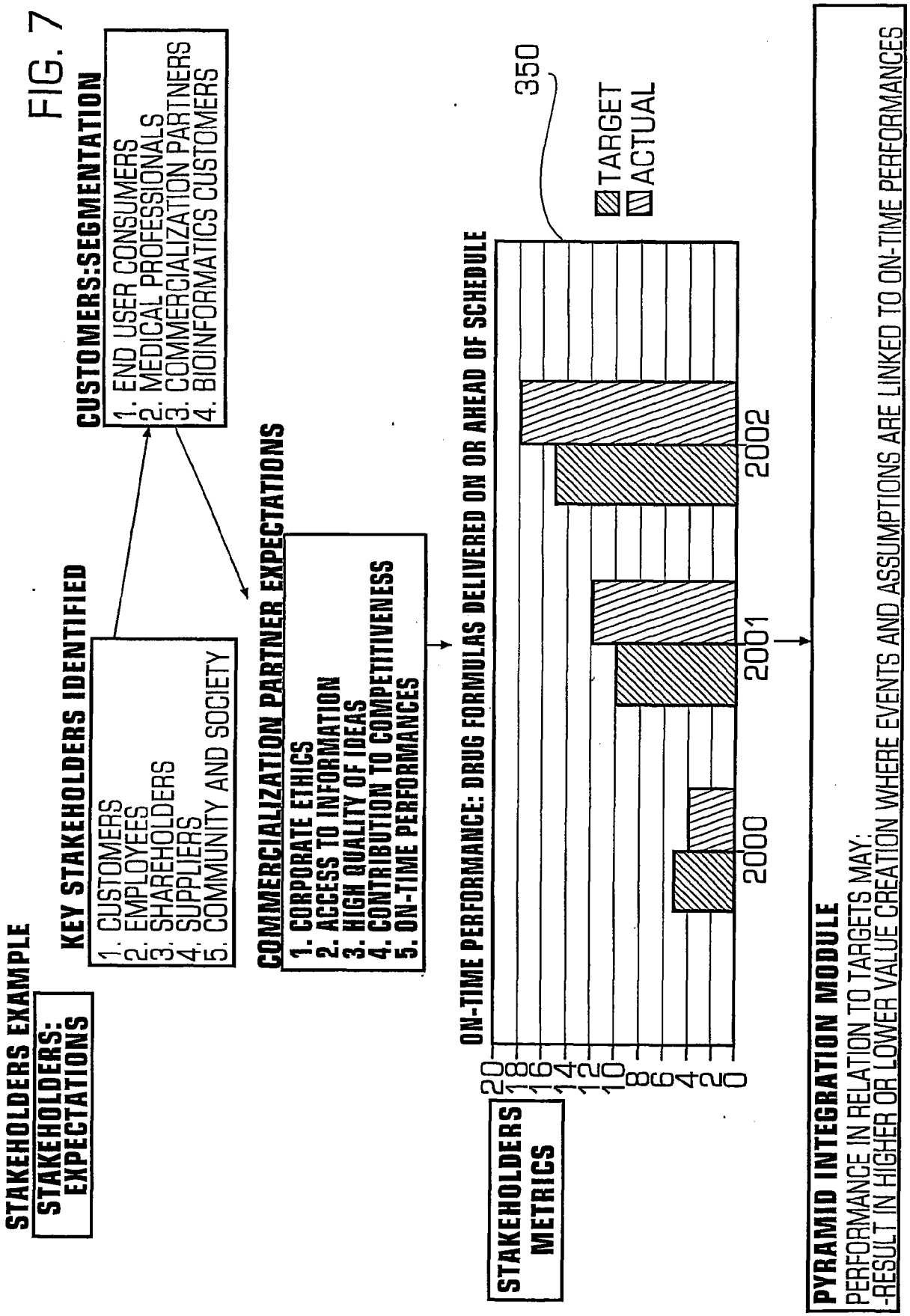

STAKEHOLDERS EXAMPLE
STAKEHOLDERS: EXPECTATIONS
KEY STAKEHOLDERS IDENTIFIED
1. CUSTOMERS
2. EMPLOYEES
3. SHAREHOLDERS
4. SUPPLIERS
5. COMMUNITY AND SOCIETY
CUSTOMERS:SEGMENTATION
1. END USER CONSUMERS
2. MEDICAL PROFESSIONALS
3. COMMERCIALIZATION PARTNERS
4. BIOINFORMATICS CUSTOMERS
COMMERCIALIZATION PARTNER EXPECTATIONS
1. CORPORATE ETHICS
2. ACCESS TO INFORMATION
3. HIGH QUALITY OF IDEAS
4. CONTRIBUTION TO COMPETITIVENESS
5. ON-TIME PERFORMANCES
STAKEHOLDERS METRICS
ON-TIME PERFORMANCE: DRUG FORMULAS DELIVERED ON OR AHEAD OF SCHEDULE
350
TARGET
ACTUAL
2000
2001
2002
0
2
4
6
8
10
12
14
16
18
20
PYRAMID INTEGRATION MODULE
PERFORMANCE IN RELATION TO TARGETS MAY:
-RESULT IN HIGHER OR LOWER VALUE CREATION WHERE EVENTS AND ASSUMPTIONS ARE LINKED TO ON-TIME PERFORMANCES

FIG. 8A

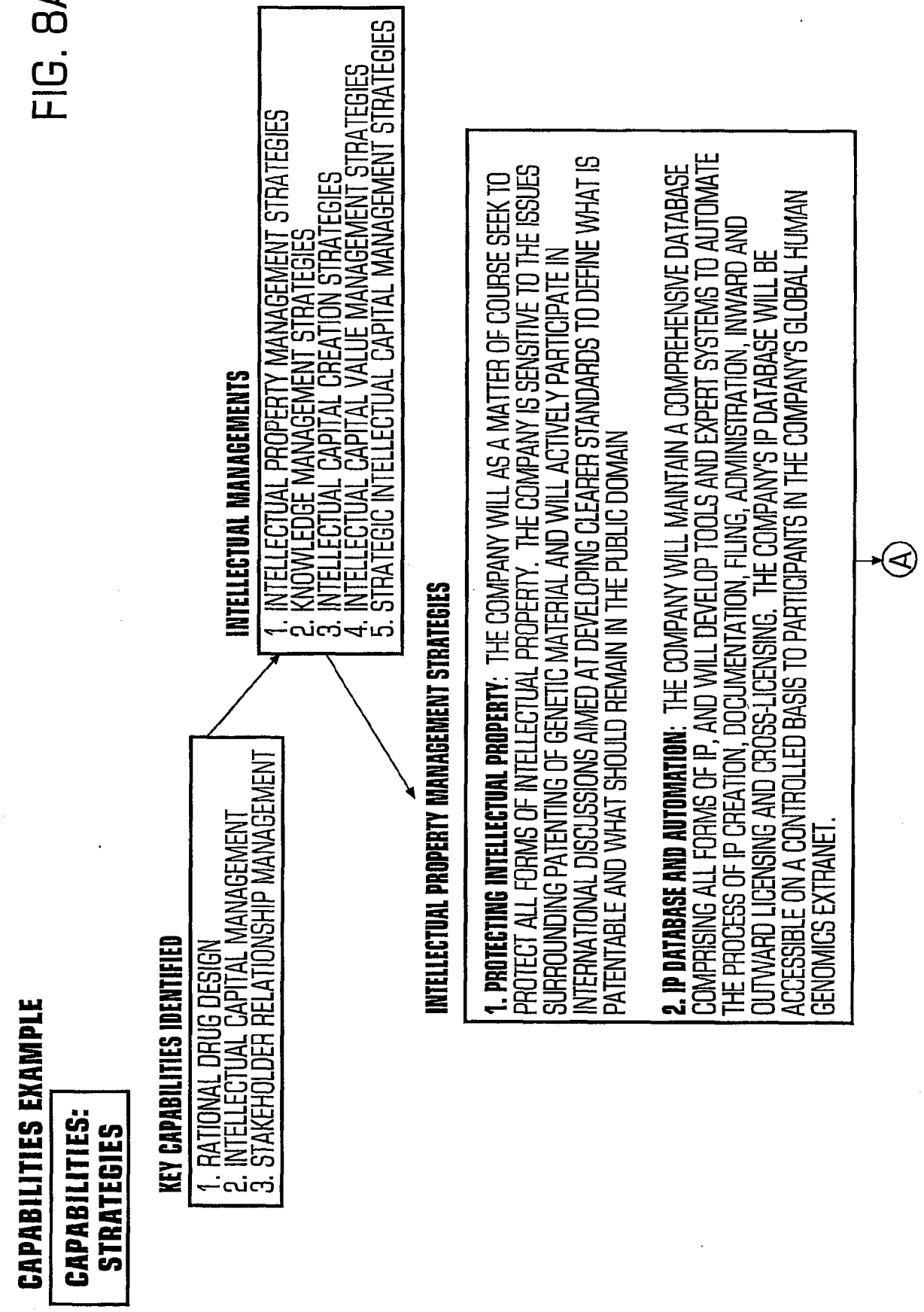

CAPABILITIES EXAMPLE
CAPABILITIES: STRATEGIES
KEY CAPABILITIES IDENTIFIED
1. RATIONAL DRUG DESIGN
2. INTELLECTUAL CAPITAL MANAGEMENT
3. STAKEHOLDER RELATIONSHIP MANAGEMENT
INTELLECTUAL MANAGEMENTS
1. INTELLECTUAL PROPERTY MANAGEMENT STRATEGIES
2. KNOWLEDGE MANAGEMENT STRATEGIES
3. INTELLECTUAL CAPITAL CREATION STRATEGIES
4. INTELLECTUAL CAPITAL VALUE MANAGEMENT STRATEGIES
5. STRATEGIC INTELLECTUAL CAPITAL MANAGEMENT STRATEGIES
INTELLECTUAL PROPERTY MANAGEMENT STRATEGIES
1. PROTECTING INTELLECTUAL PROPERTY: THE COMPANY WILL AS A MATTER OF COURSE SEEK TO PROTECT ALL FORMS OF INTELLECTUAL PROPERTY. THE COMPANY IS SENSITIVE TO THE ISSUES SURROUNDING PATENTING OF GENETIC MATERIAL AND WILL ACTIVELY PARTICIPATE IN INTERNATIONAL DISCUSSIONS AIMED AT DEVELOPING CLEARER STANDARDS TO DEFINE WHAT IS PATENTABLE AND WHAT SHOULD REMAIN IN THE PUBLIC DOMAIN
2. IP DATABASE AND AUTOMATION: THE COMPANY WILL MAINTAIN A COMPREHENSIVE DATABASE COMPRISING ALL FORMS OF IP, AND WILL DEVELOP TOOLS AND EXPERT SYSTEMS TO AUTOMATE THE PROCESS OF IP CREATION, DOCUMENTATION, FILING, ADMINISTRATION, INWARD AND OUTWARD LICENSING AND CROSS-LICENSING. THE COMPANY'S IP DATABASE WILL BE ACCESSIBLE ON A CONTROLLED BASIS TO PARTICIPANTS IN THE COMPANY'S GLOBAL HUMAN GENOMICS EXTRANET.
A

FIG. 8B

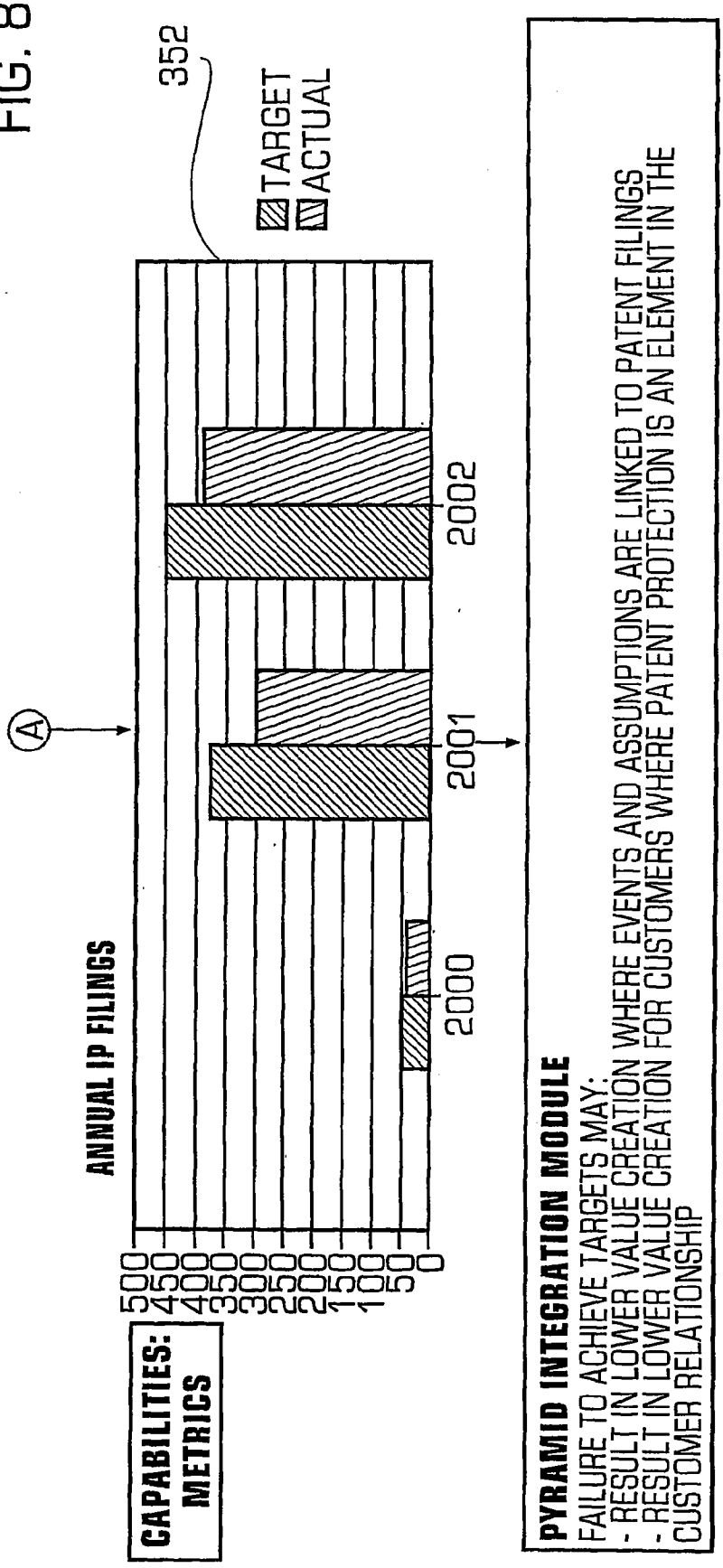

352
TARGET
ACTUAL
2002
2001
2000
A
ANNUAL IP FILINGS
500
450
400
350
300
250
200
150
100
50
CAPABILITIES:
METRICS
PYRAMID INTEGRATION MODULE
FAILURE TO ACHIEVE TARGETS MAY:
- RESULT IN LOWER VALUE CREATION WHERE EVENTS AND ASSUMPTIONS ARE LINKED TO PATENT FILINGS
- RESULT IN LOWER VALUE CREATION FOR CUSTOMERS WHERE PATENT PROTECTION IS AN ELEMENT IN THE CUSTOMER RELATIONSHIP

FIG. 9

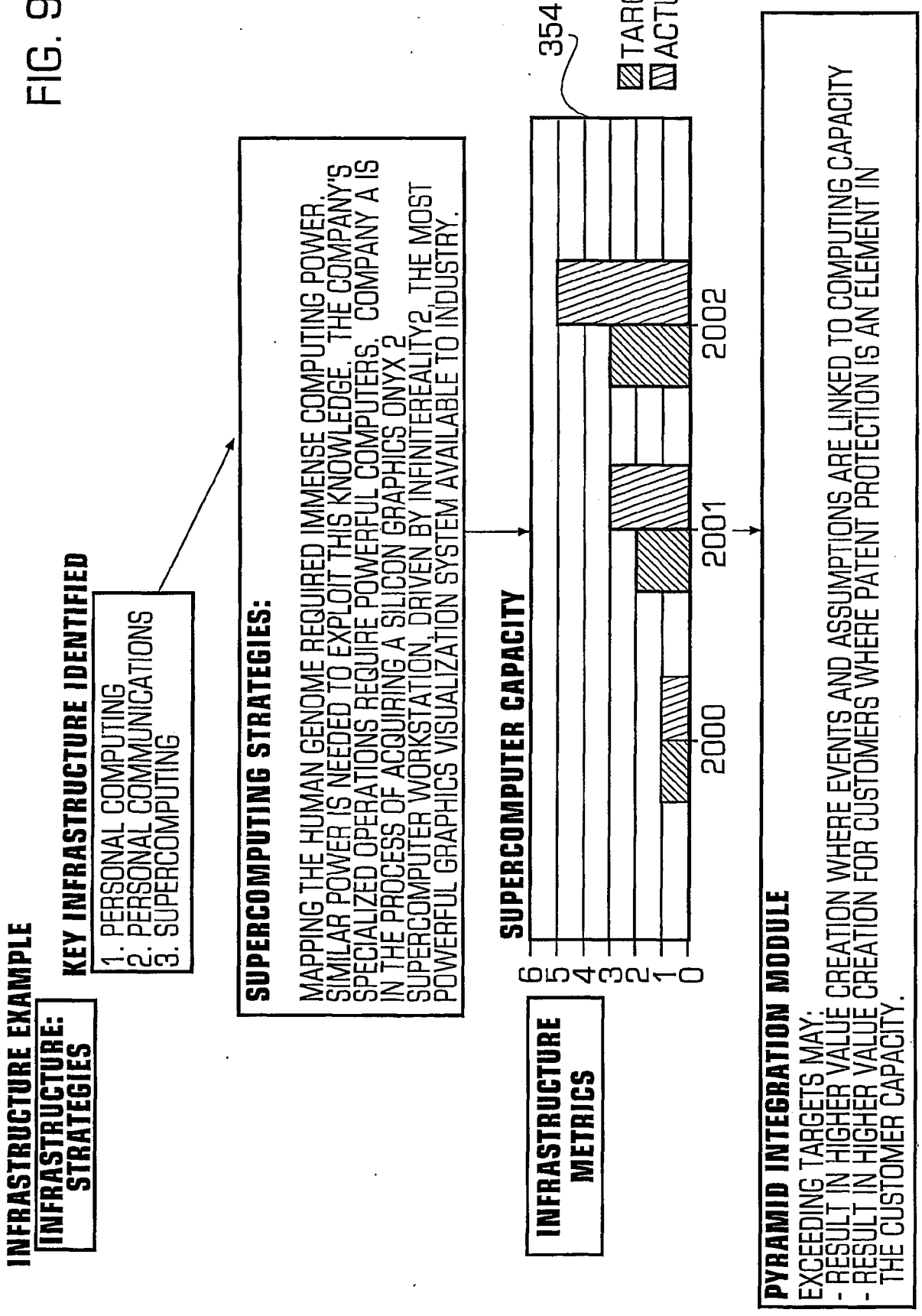
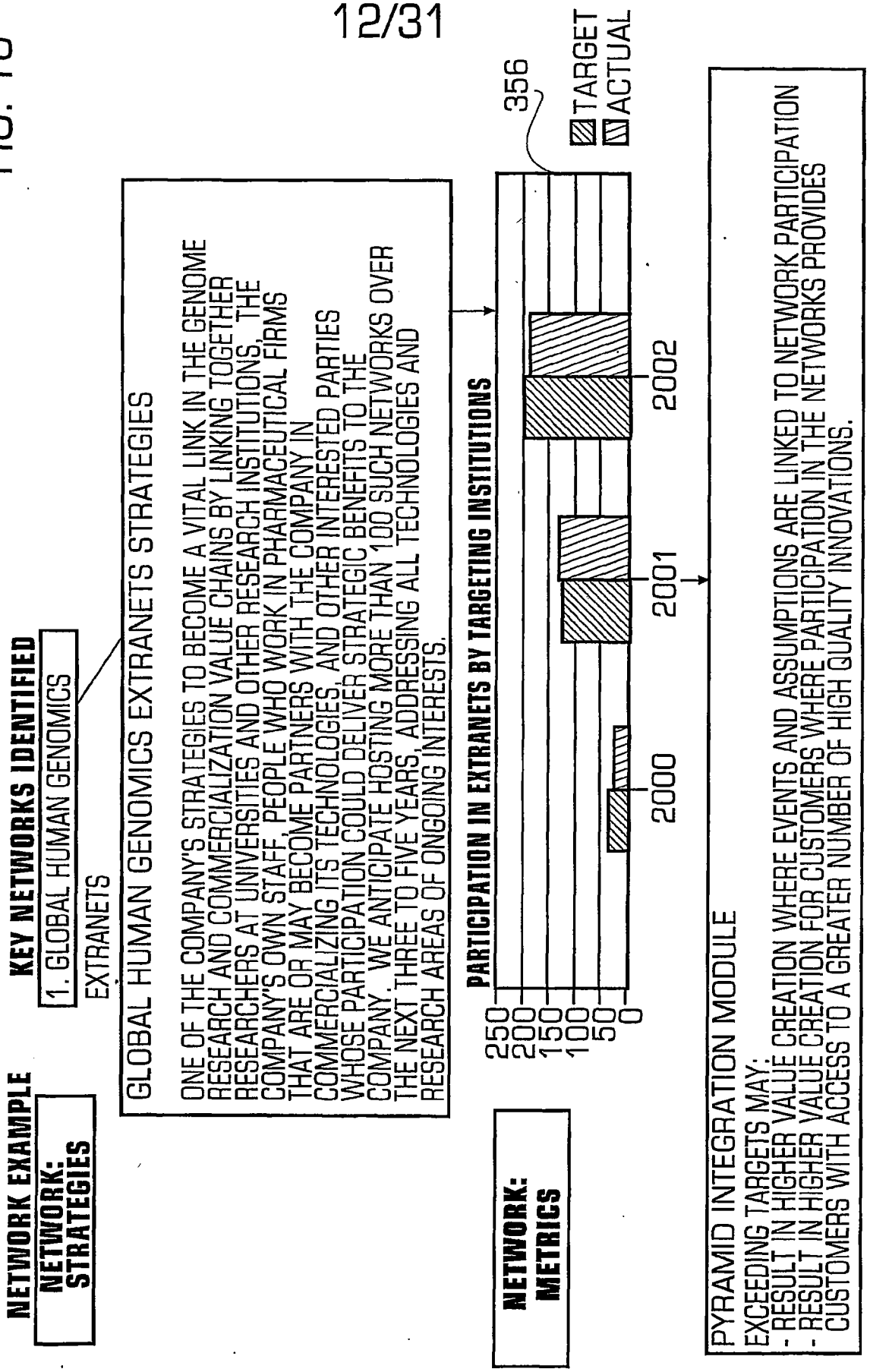

INFRASTRUCTURE EXAMPLE
INFRASTRUCTURE: STRATEGIES
KEY INFRASTRUCTURE IDENTIFIED
1. PERSONAL COMPUTING
2. PERSONAL COMMUNICATIONS
3. SUPERCOMPUTING
SUPERCOMPUTING STRATEGIES:
MAPPING THE HUMAN GENOME REQUIRED IMMENSE COMPUTING POWER. SIMILAR POWER IS NEEDED TO EXPLOIT THIS KNOWLEDGE. THE COMPANY'S SPECIALIZED OPERATIONS REQUIRE POWERFUL COMPUTERS. COMPANY A IS IN THE PROCESS OF ACQUIRING A SILICON GRAPHICS ONYX 2 SUPERCOMPUTER WORKSTATION, DRIVEN BY INFINITEREALITY2, THE MOST POWERFUL GRAPHICS VISUALIZATION SYSTEM AVAILABLE TO INDUSTRY.
INFRASTRUCTURE METRICS
SUPERCOMPUTER CAPACITY
354
TARGET
ACTUAL
6
5
4
3
2
1
0
2000
2001
2002
PYRAMID INTEGRATION MODULE
EXCEEDING TARGETS MAY:
- RESULT IN HIGHER VALUE CREATION WHERE EVENTS AND ASSUMPTIONS ARE LINKED TO COMPUTING CAPACITY
- RESULT IN HIGHER VALUE CREATION FOR CUSTOMERS WHERE PATENT PROTECTION IS AN ELEMENT IN THE CUSTOMER CAPACITY.

FIG. 10


NETWORK EXAMPLE
NETWORK: STRATEGIES
KEY NETWORKS IDENTIFIED
1. GLOBAL HUMAN GENOMICS EXTRANETS
GLOBAL HUMAN GENOMICS EXTRANETS STRATEGIES
ONE OF THE COMPANY'S STRATEGIES TO BECOME A VITAL LINK IN THE GENOME RESEARCH AND COMMERCIALIZATION VALUE CHAINS BY LINKING TOGETHER RESEARCHERS AT UNIVERSITIES AND OTHER RESEARCH INSTITUTIONS, THE COMPANY'S OWN STAFF, PEOPLE WHO WORK IN PHARMACEUTICAL FIRMS THAT ARE OR MAY BECOME PARTNERS WITH THE COMPANY IN COMMERCIALIZING ITS TECHNOLOGIES, AND OTHER INTERESTED PARTIES WHOSE PARTICIPATION COULD DELIVER STRATEGIC BENEFITS TO THE COMPANY. WE ANTICIPATE HOSTING MORE THAN 100 SUCH NETWORKS OVER THE NEXT THREE TO FIVE YEARS, ADDRESSING ALL TECHNOLOGIES AND RESEARCH AREAS OF ONGOING INTERESTS.
NETWORK: METRICS
PARTICIPATION IN EXTRANETS BY TARGETING INSTITUTIONS
250
200
150
100
50
0
2000
2001
2002
356
TARGET
ACTUAL
PYRAMID INTEGRATION MODULE
EXCEEDING TARGETS MAY:
- RESULT IN HIGHER VALUE CREATION WHERE EVENTS AND ASSUMPTIONS ARE LINKED TO NETWORK PARTICIPATION
- RESULT IN HIGHER VALUE CREATION FOR CUSTOMERS WHERE PARTICIPATION IN THE NETWORKS PROVIDES CUSTOMERS WITH ACCESS TO A GREATER NUMBER OF HIGH QUALITY INNOVATIONS.

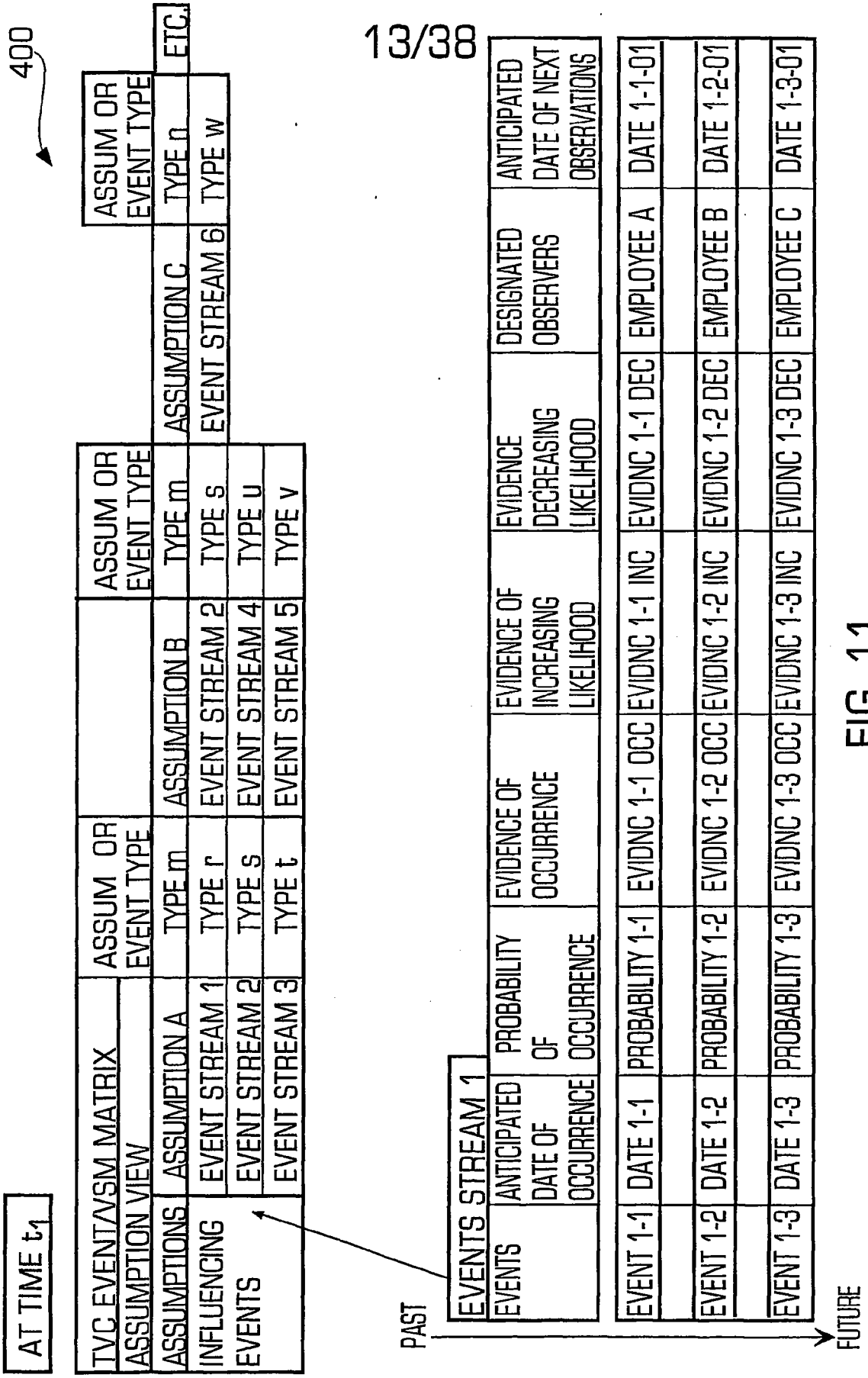
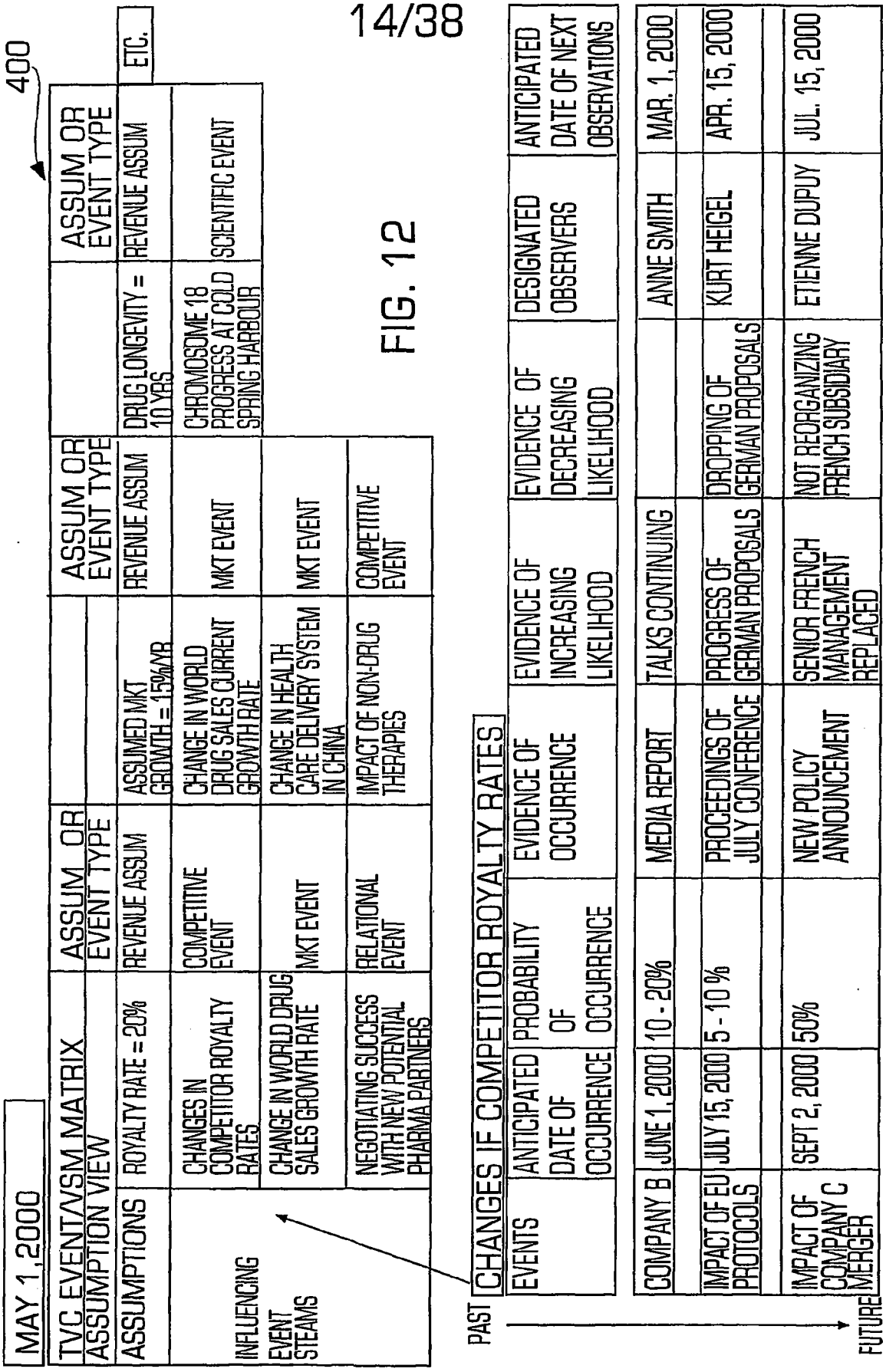

400
AT TIME t_1
TVC EVENT/ASM MATRIX
ASSUMPTION VIEW
ASSUMPTIONS
INFLUENCING EVENTS
ASSUM OR EVENT TYPE
ASSUMPTION A
TYPE m
EVENT STREAM 1
TYPE r
EVENT STREAM 2
TYPE s
EVENT STREAM 3
TYPE t
ASSUMPTION B
TYPE m
EVENT STREAM 2
TYPE s
EVENT STREAM 4
TYPE u
EVENT STREAM 5
TYPE v
ASSUM OR EVENT TYPE
ASSUMPTION C
TYPE n
EVENT STREAM 6
TYPE w
ETC.
PAST
FUTURE
EVENTS STREAM 1
EVENTS
ANTICIPATED DATE OF OCCURRENCE
PROBABILITY OF OCCURRENCE
EVIDENCE OF OCCURRENCE
EVIDENCE OF INCREASING LIKELIHOOD
EVIDENCE DECREASING LIKELIHOOD
DESIGNATED OBSERVERS
ANTICIPATED DATE OF NEXT OBSERVATIONS
EVENT 1-1
DATE 1-1
PROBABILITY 1-1
EVIDNC 1-1 OCC
EVIDNC 1-1 INC
EVIDNC 1-1 DEC
EMPLOYEE A
DATE 1-1-01
EVENT 1-2
DATE 1-2
PROBABILITY 1-2
EVIDNC 1-2 OCC
EVIDNC 1-2 INC
EVIDNC 1-2 DEC
EMPLOYEE B
DATE 1-2-01
EVENT 1-3
DATE 1-3
PROBABILITY 1-3
EVIDNC 1-3 OCC
EVIDNC 1-3 INC
EVIDNC 1-3 DEC
EMPLOYEE C
DATE 1-3-01

FIG. 11


400
MAY 1,2000
TVC EVENT/VSM MATRIX
ASSUMPTION VIEW
ASSUMPTIONS
ROYALTY RATE = 20%
INFLUENCING EVENT STEAMS
CHANGES IN COMPETITOR ROYALTY RATES
CHANGE IN WORLD DRUG SALES GROWTH RATE
NEGOTIATING SUCCESS WITH NEW POTENTIAL PHARMA PARTNERS
ASSUM OR EVENT TYPE
REVENUE ASSUM
COMPETITIVE EVENT
MKT EVENT
RELATIONAL EVENT
ASSUMED MKT GROWTH = 15%/YR
CHANGE IN WORLD DRUG SALES CURRENT GROWTH RATE
CHANGE IN HEALTH CARE DELIVERY SYSTEM IN CHINA
IMPACT OF NON-DRUG THERAPIES
ASSUM OR EVENT TYPE
REVENUE ASSUM
MKT EVENT
MKT EVENT
COMPETITIVE EVENT
DRUG LONGEVITY = 10 YRS
CHROMOSOME 18 PROGRESS AT COLD SPRING HARBOUR
ASSUM OR EVENT TYPE
REVENUE ASSUM
SCIENTIFIC EVENT
ETC.
PAST
FUTURE
CHANGES IF COMPETITOR ROYALTY RATES
EVENTS
ANTICIPATED DATE OF OCCURRENCE
PROBABILITY OF OCCURRENCE
EVIDENCE OF OCCURRENCE
EVIDENCE OF INCREASING LIKELIHOOD
EVIDENCE OF DECREASING LIKELIHOOD
DESIGNATED OBSERVERS
ANTICIPATED DATE OF NEXT OBSERVATIONS
COMPANY B
JUNE 1, 2000
10 - 20%
MEDIA REPORT
TALKS CONTINUING
ANNE SMITH
MAR. 1, 2000
IMPACT OF EU PROTOCOLS
JULY 15, 2000
5 - 10 %
PROCEEDINGS OF JULY CONFERENCE
PROGRESS OF GERMAN PROPOSALS
DROPPING OF GERMAN PROPOSALS
KURT HEIGEL
APR. 15, 2000
IMPACT OF COMPANY C MERGER
SEPT 2, 2000
50%
NEW POLICY ANNOUNCEMENT
SENIOR FRENCH MANAGEMENT REPLACED
NOT REORGANIZING FRENCH SUBSIDIARY
ETIENNE DUPUY
JUL. 15, 2000

14/38

FIG. 12

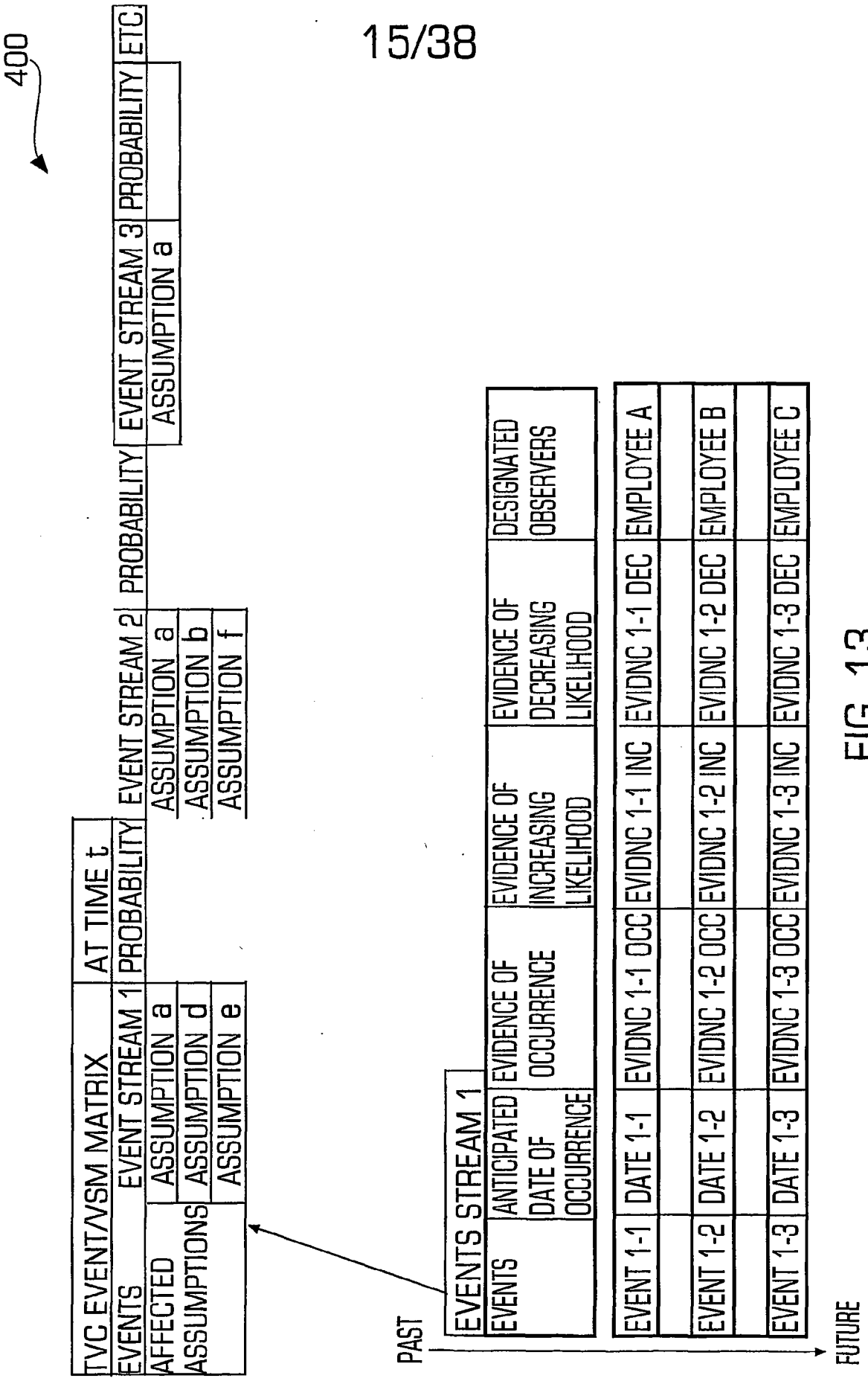

400
TVC EVENT/VSM MATRIX
AT TIME t
EVENTS
EVENT STREAM 1
PROBABILITY
AFFECTED ASSUMPTIONS
ASSUMPTION a
ASSUMPTION d
ASSUMPTION e
EVENT STREAM 2
PROBABILITY
ASSUMPTION a
ASSUMPTION b
ASSUMPTION f
EVENT STREAM 3
PROBABILITY
ETC
ASSUMPTION a
PAST
EVENTS STREAM 1
EVENTS
ANTICIPATED DATE OF OCCURRENCE
EVIDENCE OF OCCURRENCE
EVIDENCE OF INCREASING LIKELIHOOD
EVIDENCE OF DECREASING LIKELIHOOD
DESIGNATED OBSERVERS
EVENT 1-1
DATE 1-1
EVIDNC 1-1 OCC
EVIDNC 1-1 INC
EVIDNC 1-1 DEC
EMPLOYEE A
EVENT 1-2
DATE 1-2
EVIDNC 1-2 OCC
EVIDNC 1-2 INC
EVIDNC 1-2 DEC
EMPLOYEE B
EVENT 1-3
DATE 1-3
EVIDNC 1-3 OCC
EVIDNC 1-3 INC
EVIDNC 1-3 DEC
EMPLOYEE C
FUTURE

FIG. 13

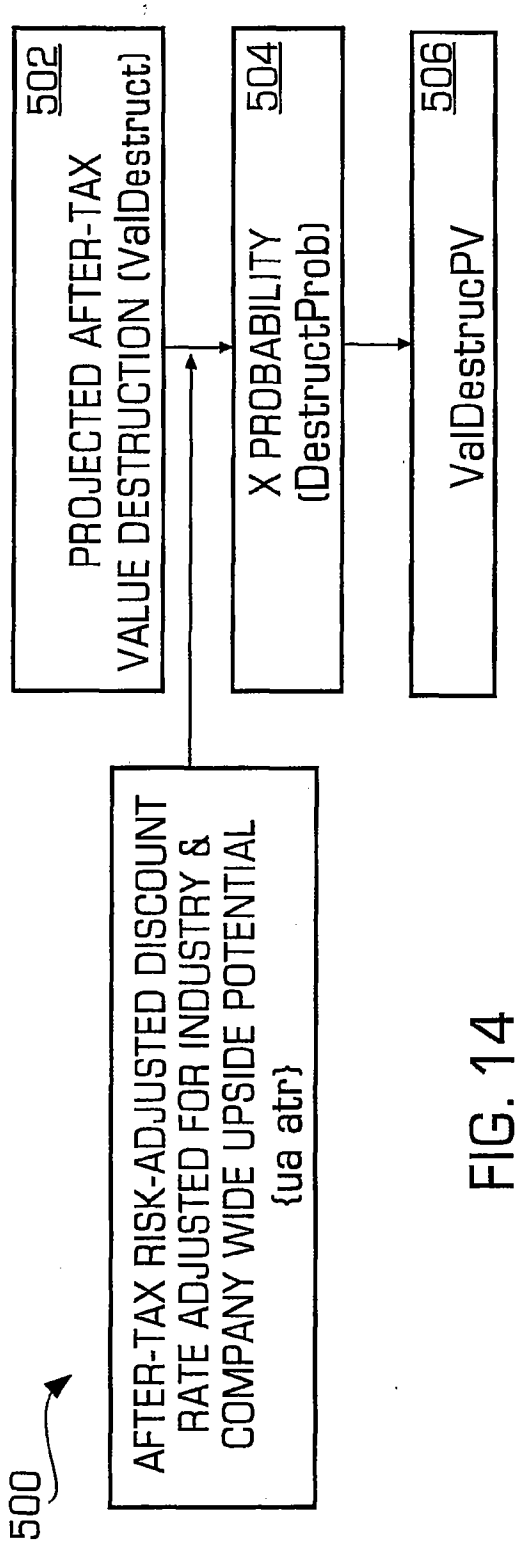

500
AFTER-TAX RISK-ADJUSTED DISCOUNT RATE ADJUSTED FOR INDUSTRY & COMPANY WIDE UPSIDE POTENTIAL {ua atr}
502
PROJECTED AFTER-TAX VALUE DESTRUCTION (ValDestruct)
504
X PROBABILITY (DestructProb)
506
ValDestrucPV

FIG. 14

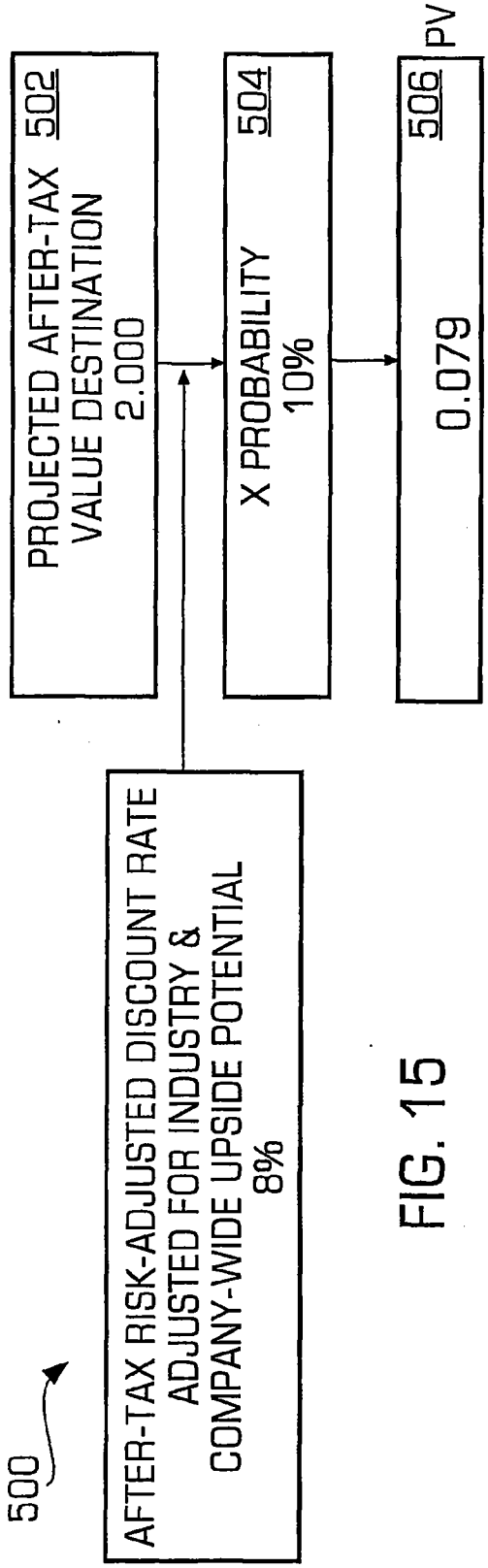

500
AFTER-TAX RISK-ADJUSTED DISCOUNT RATE ADJUSTED FOR INDUSTRY & COMPANY-WIDE UPSIDE POTENTIAL 8%
502
PROJECTED AFTER-TAX VALUE DESTINATION 2.000
504
X PROBABILITY 10%
506
0.079
PV

FIG. 15

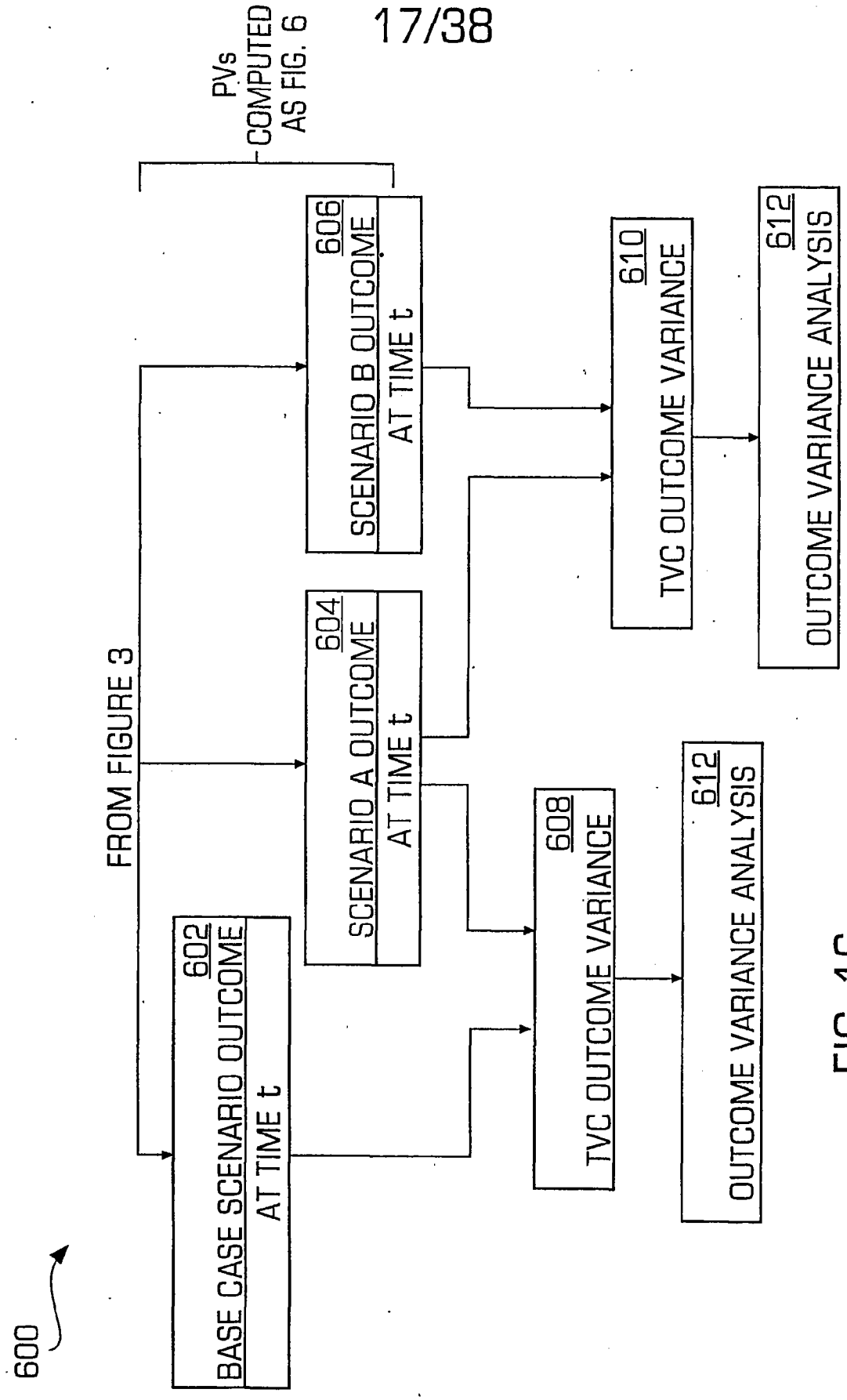

600
FROM FIGURE 3
PVs COMPUTED AS FIG. 6
602
BASE CASE SCENARIO OUTCOME AT TIME t
604
SCENARIO A OUTCOME AT TIME t
606
SCENARIO B OUTCOME AT TIME t
608
TVC OUTCOME VARIANCE
610
TVC OUTCOME VARIANCE
612
OUTCOME VARIANCE ANALYSIS
612
OUTCOME VARIANCE ANALYSIS

FIG. 16

CALCULATION OF OUTCOME VARIANCE

PV OF BIO-TECH DRUG PROJECTS	468.999
PV OF BIO-INFORMATICS TOOLS	134.424
FREE CASH PV	2.649
CURRENT PV OF GREENGENE	600.774
LAST YEAR'S PV	471.418
DELTA PV	129.356
CoCr ON LAST YR PV	75.427
OUTCOME VARIANCE	53.929

ANALYSIS OF OUTCOME VARIANCE

CAUSE	EFFECT $ MINS
REVISED PROJECTION TOOL #4 SALES FROM 0.07% TO 0.015%	25.009
WORLD BIO-TECH SALES GROWTH THRU 2005 FROM 11.5% TO 12.5%	14.931
REVISED PROJECTION DRUG #26 SALES FROM 0.45% TO 0.70%	10.196
LAST YR WORLD SALES GREW 12.9% NOT 11.5%	7.000
INCREASED R&D SPENDING LAST YEAR	-1.607
INCREASED FUTURE R&D SPENDING	-1.461
EFFECT OF WIIO DONATION	-0.306
LAST YR'S INVESTMENT INCOME BETTER	0.167
	53.929

FIG. 17A

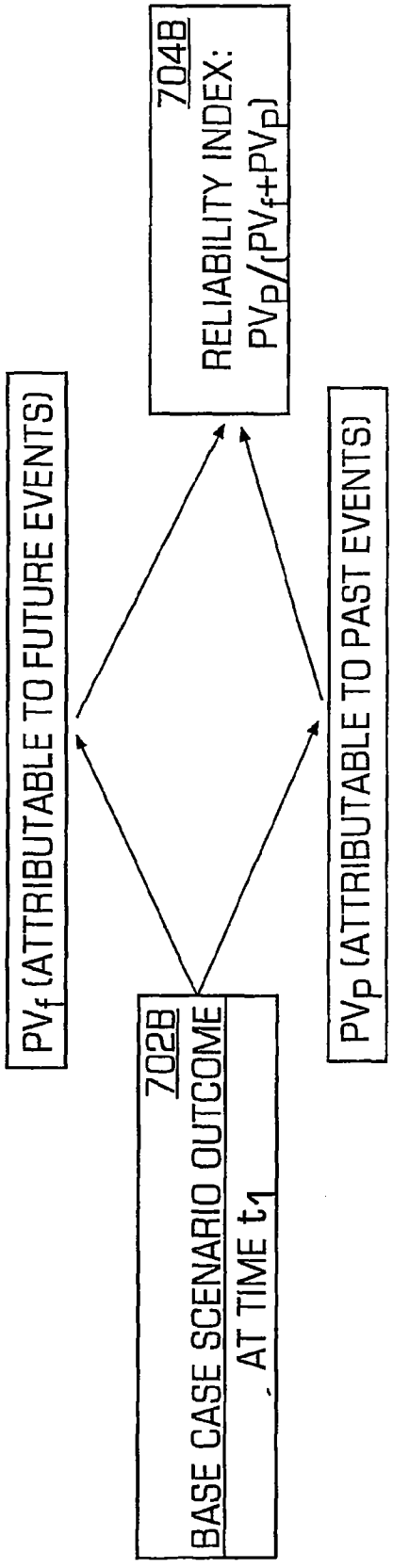


FIG. 17B

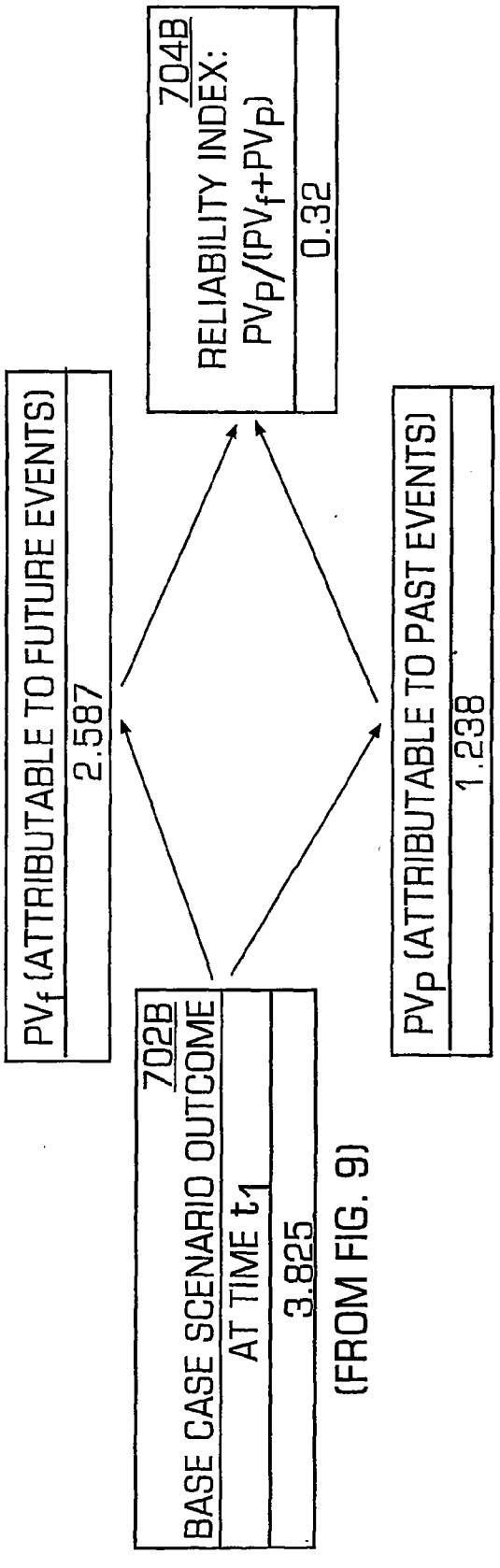


FIG. 17C

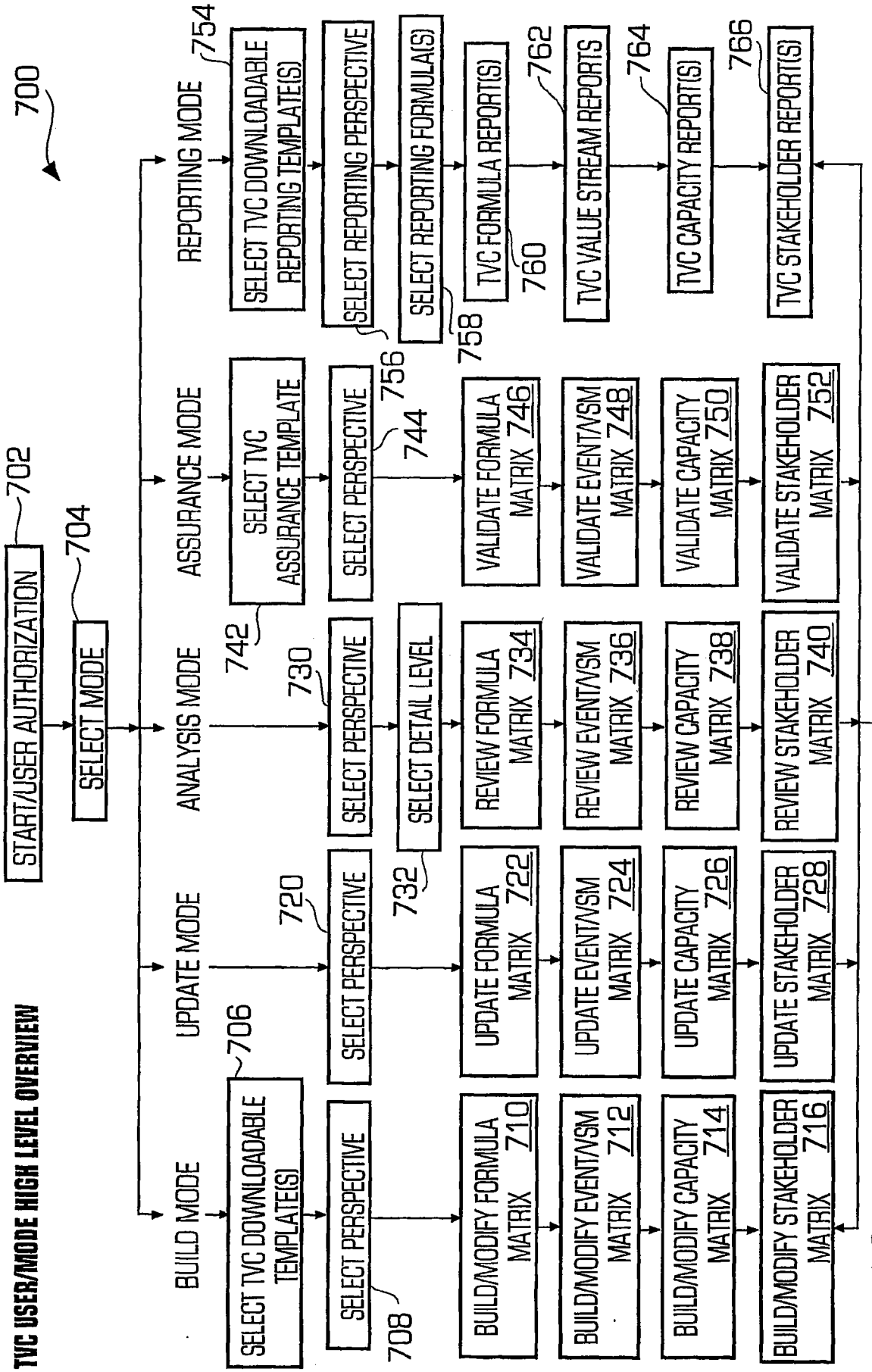

TVC USER/MODE HIGH LEVEL OVERVIEW
700
START/USER AUTHORIZATION
702
SELECT MODE
704
BUILD MODE
UPDATE MODE
ANALYSIS MODE
ASSURANCE MODE
REPORTING MODE
SELECT TVC DOWNLOADABLE TEMPLATE(S)
706
SELECT PERSPECTIVE
708
BUILD/MODIFY FORMULA MATRIX 710
BUILD/MODIFY EVENT/VSM MATRIX 712
BUILD/MODIFY CAPACITY MATRIX 714
BUILD/MODIFY STAKEHOLDER MATRIX 716
SELECT PERSPECTIVE
720
SELECT DETAIL LEVEL
732
UPDATE FORMULA MATRIX 722
UPDATE EVENT/VSM MATRIX 724
UPDATE CAPACITY MATRIX 726
UPDATE STAKEHOLDER MATRIX 728
SELECT PERSPECTIVE
730
REVIEW FORMULA MATRIX 734
REVIEW EVENT/VSM MATRIX 736
REVIEW CAPACITY MATRIX 738
REVIEW STAKEHOLDER MATRIX 740
SELECT TVC ASSURANCE TEMPLATE
742
SELECT PERSPECTIVE
744
VALIDATE FORMULA MATRIX 746
VALIDATE EVENT/VSM MATRIX 748
VALIDATE CAPACITY MATRIX 750
VALIDATE STAKEHOLDER MATRIX 752
SELECT TVC DOWNLOADABLE REPORTING TEMPLATE(S)
754
SELECT REPORTING PERSPECTIVE
756
SELECT REPORTING FORMULA(S)
758
TVC FORMULA REPORT(S)
760
TVC VALUE STREAM REPORTS
762
TVC CAPACITY REPORT(S)
764
TVC STAKEHOLDER REPORT(S)
766
END
718

FIG. 18

AT TIME t

STAKEHOLDERS STORED ASSUMPTIONS

TVC EVENT/VSM MATRIX EVENT VIEW		STAKEHOLDER REFERENCE		STAKEHOLDER REFERENCE		STAKEHOLDER REFERENCE	
EVENTS	EVENT 1	MANAGEMENT	EVENT 2	MANAGEMENT	EVENT 3	USER A	ETC
RELATED ASSUMPTIONS	ASSUMPTION a	MANAGEMENT	ASSUMPTION b	MANAGEMENT	ASSUMPTION c	USER A	
	ASSUMPTION a	USER B	ASSUMPTION c	MANAGEMENT	ASSUMPTION c	USER B	
	ASSUMPTION a	USER C	ASSUMPTION d	MANAGEMENT			

FIG. 19

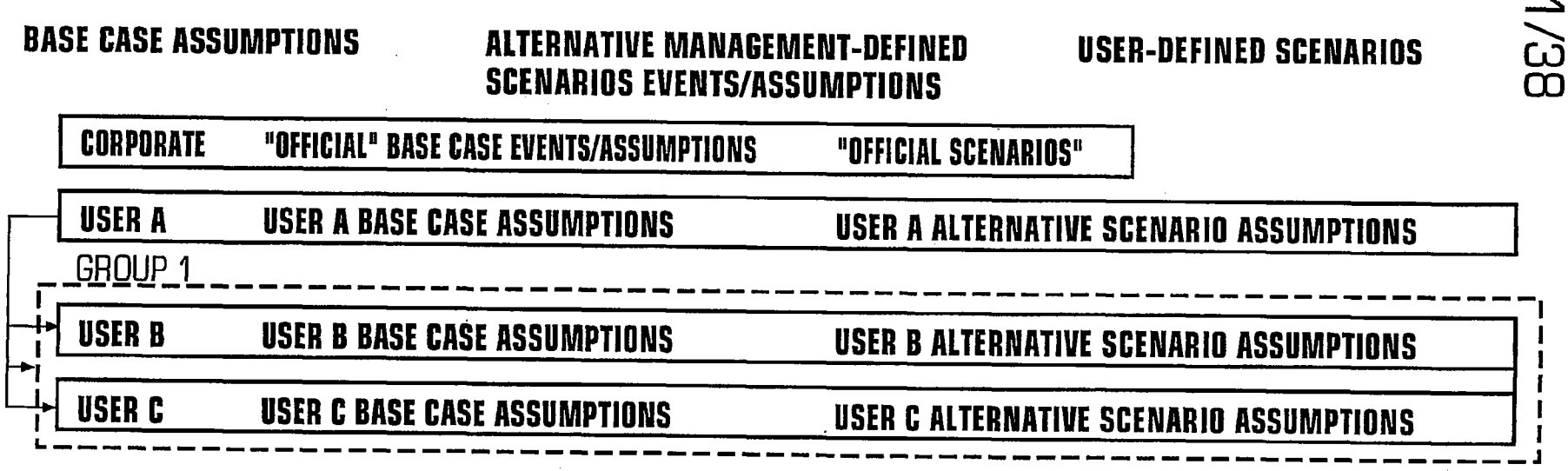


FIG. 20

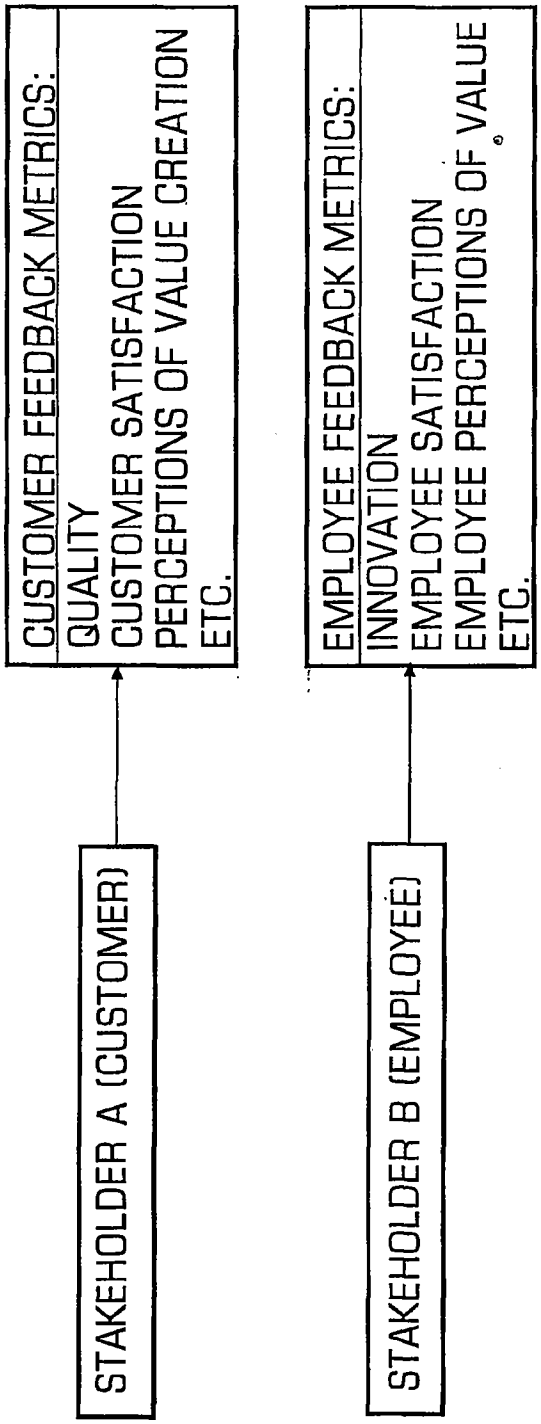
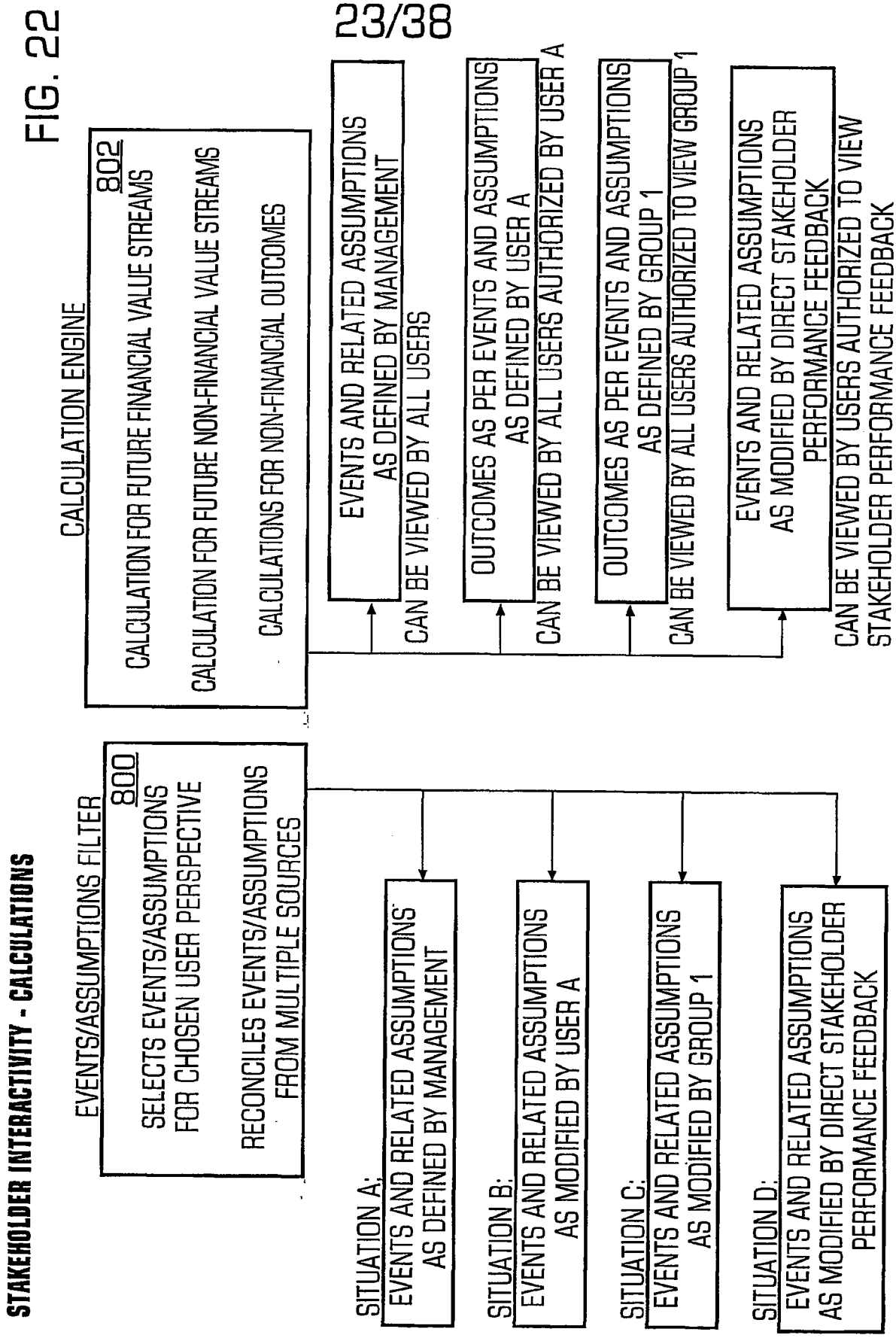

STAKEHOLDER A (CUSTOMER)
CUSTOMER FEEDBACK METRICS:
QUALITY
CUSTOMER SATISFACTION
PERCEPTIONS OF VALUE CREATION
ETC.
STAKEHOLDER B (EMPLOYEE)
EMPLOYEE FEEDBACK METRICS:
INNOVATION
EMPLOYEE SATISFACTION
EMPLOYEE PERCEPTIONS OF VALUE
ETC.

FIG. 21

FIG. 22


STAKEHOLDER INTERACTIVITY - CALCULATIONS
EVENTS/ASSUMPTIONS FILTER
800
SELECTS EVENTS/ASSUMPTIONS FOR CHOSEN USER PERSPECTIVE
RECONCILES EVENTS/ASSUMPTIONS FROM MULTIPLE SOURCES
SITUATION A:
EVENTS AND RELATED ASSUMPTIONS AS DEFINED BY MANAGEMENT
SITUATION B:
EVENTS AND RELATED ASSUMPTIONS AS MODIFIED BY USER A
SITUATION C:
EVENTS AND RELATED ASSUMPTIONS AS MODIFIED BY GROUP 1
SITUATION D:
EVENTS AND RELATED ASSUMPTIONS AS MODIFIED BY DIRECT STAKEHOLDER PERFORMANCE FEEDBACK
CALCULATION ENGINE
802
CALCULATION FOR FUTURE FINANCIAL VALUE STREAMS
CALCULATION FOR FUTURE NON-FINANCIAL VALUE STREAMS
CALCULATIONS FOR NON-FINANCIAL OUTCOMES
EVENTS AND RELATED ASSUMPTIONS AS DEFINED BY MANAGEMENT
CAN BE VIEWED BY ALL USERS
OUTCOMES AS PER EVENTS AND ASSUMPTIONS AS DEFINED BY USER A
CAN BE VIEWED BY ALL USERS AUTHORIZED BY USER A
OUTCOMES AS PER EVENTS AND ASSUMPTIONS AS DEFINED BY GROUP 1
CAN BE VIEWED BY ALL USERS AUTHORIZED TO VIEW GROUP 1
EVENTS AND RELATED ASSUMPTIONS AS MODIFIED BY DIRECT STAKEHOLDER PERFORMANCE FEEDBACK
CAN BE VIEWED BY USERS AUTHORIZED TO VIEW STAKEHOLDER PERFORMANCE FEEDBACK

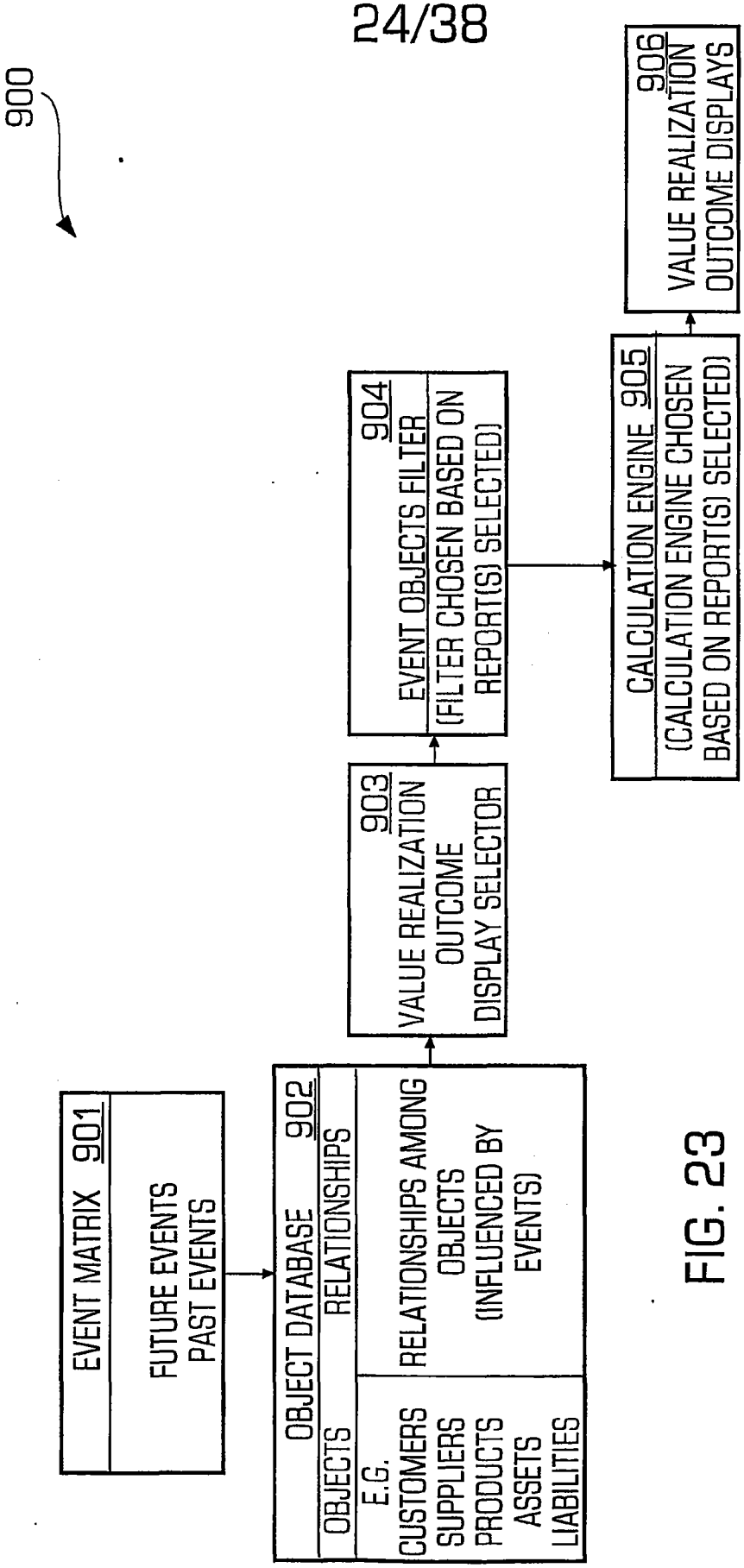

900
EVENT MATRIX 901
FUTURE EVENTS
PAST EVENTS
OBJECT DATABASE 902
OBJECTS
E.G.
CUSTOMERS
SUPPLIERS
PRODUCTS
ASSETS
LIABILITIES
RELATIONSHIPS
RELATIONSHIPS AMONG OBJECTS (INFLUENCED BY EVENTS)
903
VALUE REALIZATION OUTCOME DISPLAY SELECTOR
904
EVENT OBJECTS FILTER
(FILTER CHOSEN BASED ON REPORT(S) SELECTED)
CALCULATION ENGINE 905
(CALCULATION ENGINE CHOSEN BASED ON REPORT(S) SELECTED)
906
VALUE REALIZATION OUTCOME DISPLAYS

FIG. 23

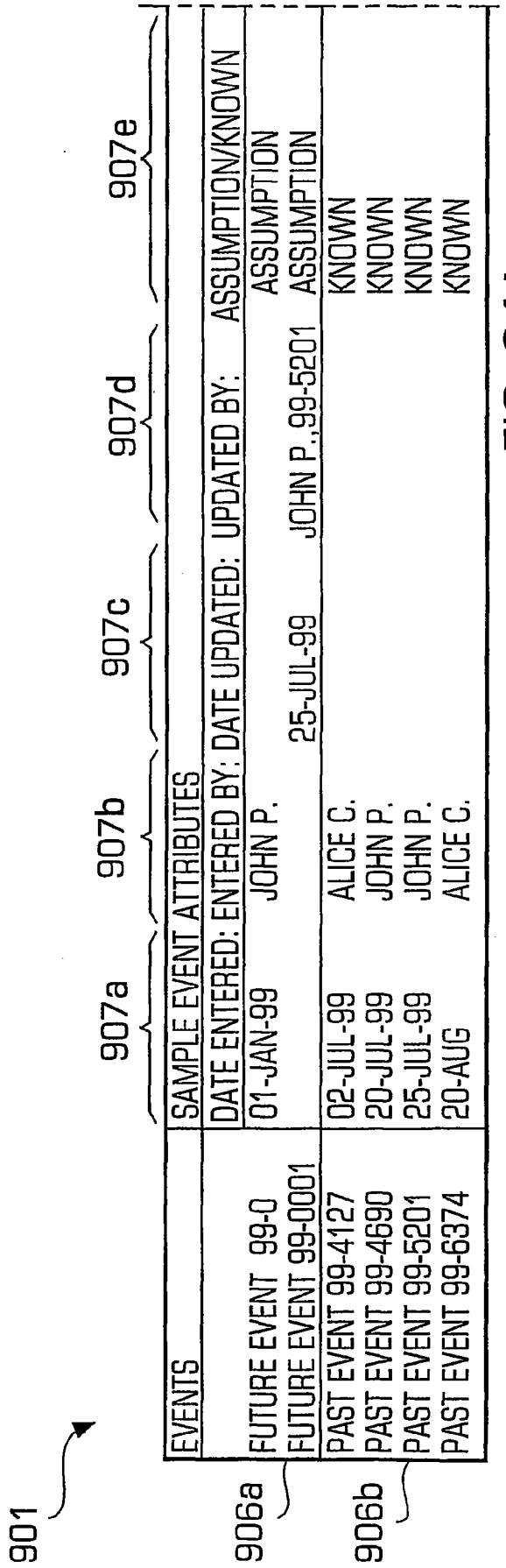


FIG. 24A

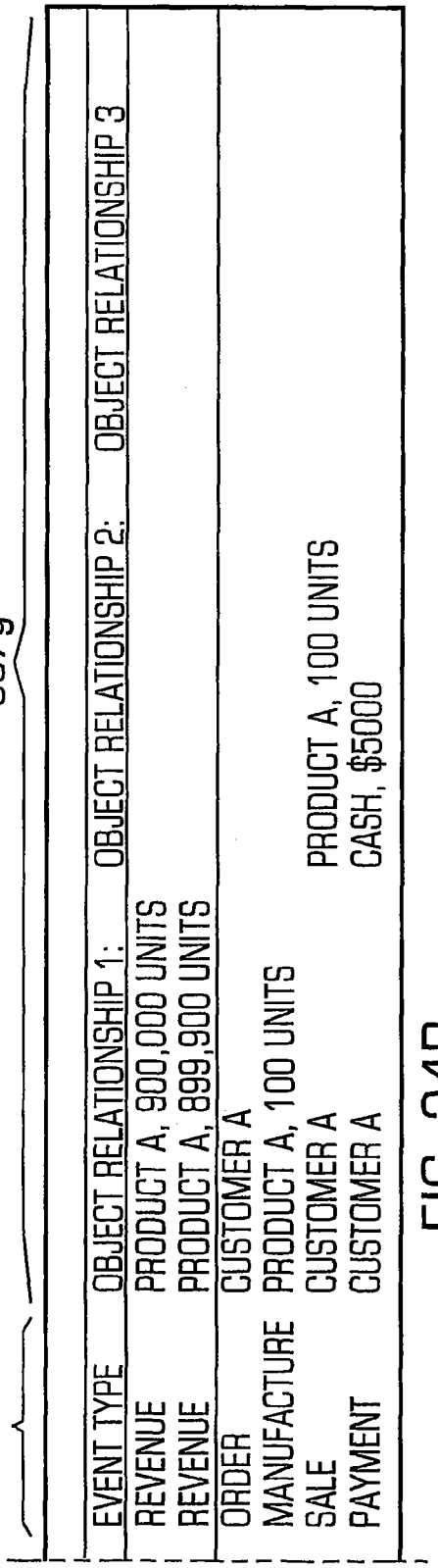


FIG. 24B

CUSTOMER OBJECT SAMPLE ATTRIBUTES	908
CUSTOMER INFORMATION	
NAME:	CUSTOMER 1
ADDRESS:	123 MAIN STREET
CONTACT:	STEVEN JONES, PRESIDENT
OTHER CUSTOMER DETAILS	CUSTOMER SINCE 1989
EVENT REFERENCES:	
EVENT RELATIONSHIPS:	99-4127 (ORDER)
EVENT RELATIONSHIPS:	99-5201 (SALE)
EVENT RELATIONSHIPS:	99-6374 (PAYMENT)

FIG. 25A

PRODUCT OBJECT SAMPLE ATTRIBUTES	909
PRODUCT INFORMATION:	
NAME:	PRODUCT A
COMPONENTS:	PARTS 24, 48, 67
PRICE:	$50
COST:	$25.00
OTHER PRODUCT DETAILS	ENGINEERING DRAWING 472
EVENT REFERENCES:	
EVENT RELATIONSHIPS:	99-4127 (ORDER)
EVENT RELATIONSHIPS:	99-4690 (MANUFACTURE)
EVENT RELATIONSHIPS:	99-5201 (SALE)

FIG. 25B

FINANCIAL OBJECT SAMPLE ATTRIBUTES	910
CASH INFORMATION:	
BANK NAME:	CENTRETOWN BANK
ADDRESS:	250 MAIN STREET
CONTACT:	PETER SMITH, BRANCH MANAGER
ACCOUNT NUMBER:	1298-33-4705
EVENT REFERENCES:	
EVENT RELATIONSHIPS:	99-6374 (PAYMENT)

FIG. 25C

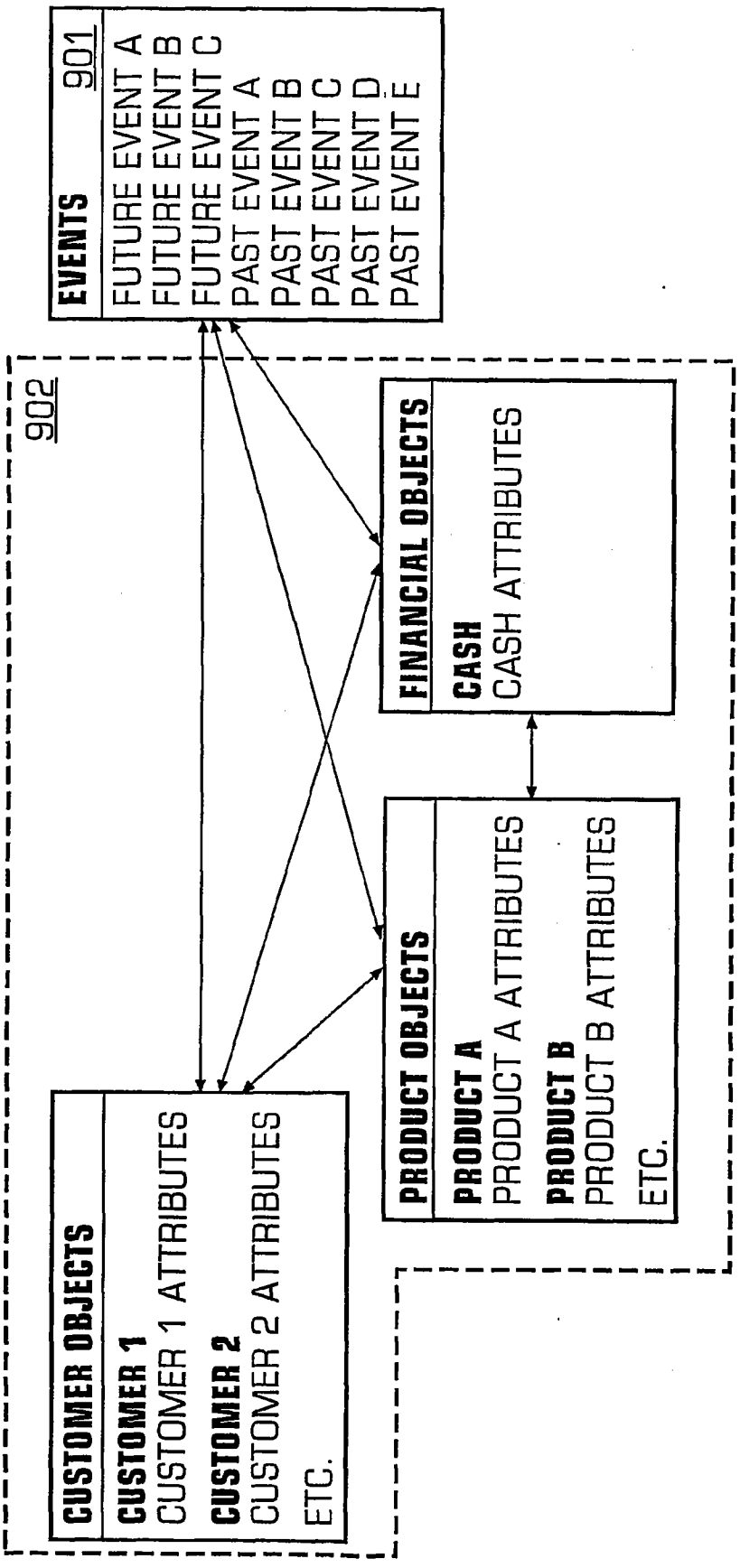

EVENTS 901
FUTURE EVENT A
FUTURE EVENT B
FUTURE EVENT C
PAST EVENT A
PAST EVENT B
PAST EVENT C
PAST EVENT D
PAST EVENT E
902
FINANCIAL OBJECTS
CASH
CASH ATTRIBUTES
PRODUCT OBJECTS
PRODUCT A
PRODUCT A ATTRIBUTES
PRODUCT B
PRODUCT B ATTRIBUTES
ETC.
CUSTOMER OBJECTS
CUSTOMER 1
CUSTOMER 1 ATTRIBUTES
CUSTOMER 2
CUSTOMER 2 ATTRIBUTES
ETC.

FIG. 26

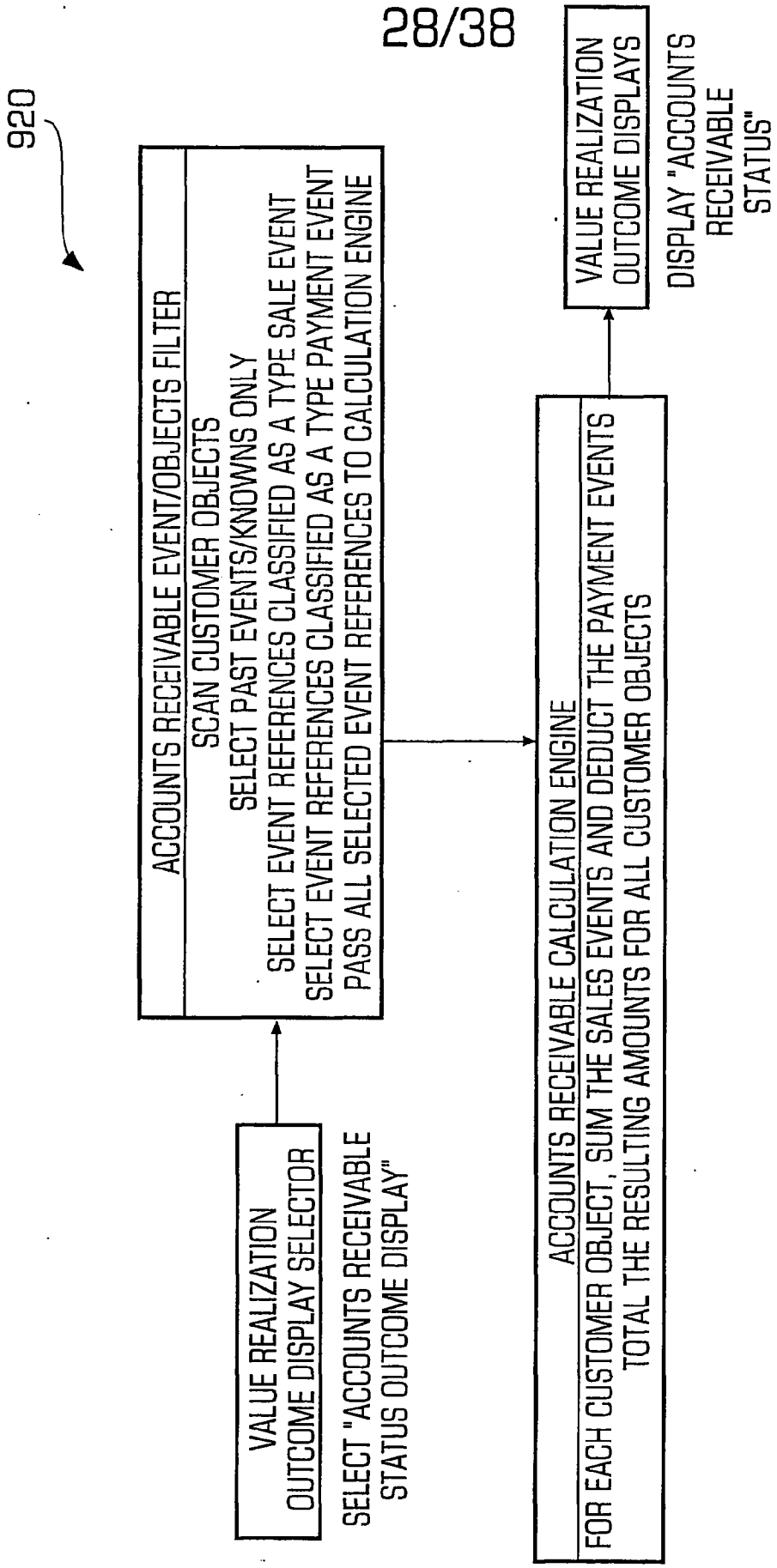

920
ACCOUNTS RECEIVABLE EVENT/OBJECTS FILTER
SCAN CUSTOMER OBJECTS
SELECT PAST EVENTS/KNOWNS ONLY
SELECT EVENT REFERENCES CLASSIFIED AS A TYPE SALE EVENT
SELECT EVENT REFERENCES CLASSIFIED AS A TYPE PAYMENT EVENT
PASS ALL SELECTED EVENT REFERENCES TO CALCULATION ENGINE
VALUE REALIZATION OUTCOME DISPLAY SELECTOR
SELECT "ACCOUNTS RECEIVABLE STATUS OUTCOME DISPLAY"
ACCOUNTS RECEIVABLE CALCULATION ENGINE
FOR EACH CUSTOMER OBJECT, SUM THE SALES EVENTS AND DEDUCT THE PAYMENT EVENTS
TOTAL THE RESULTING AMOUNTS FOR ALL CUSTOMER OBJECTS
VALUE REALIZATION OUTCOME DISPLAYS
DISPLAY "ACCOUNTS RECEIVABLE STATUS"

FIG. 27

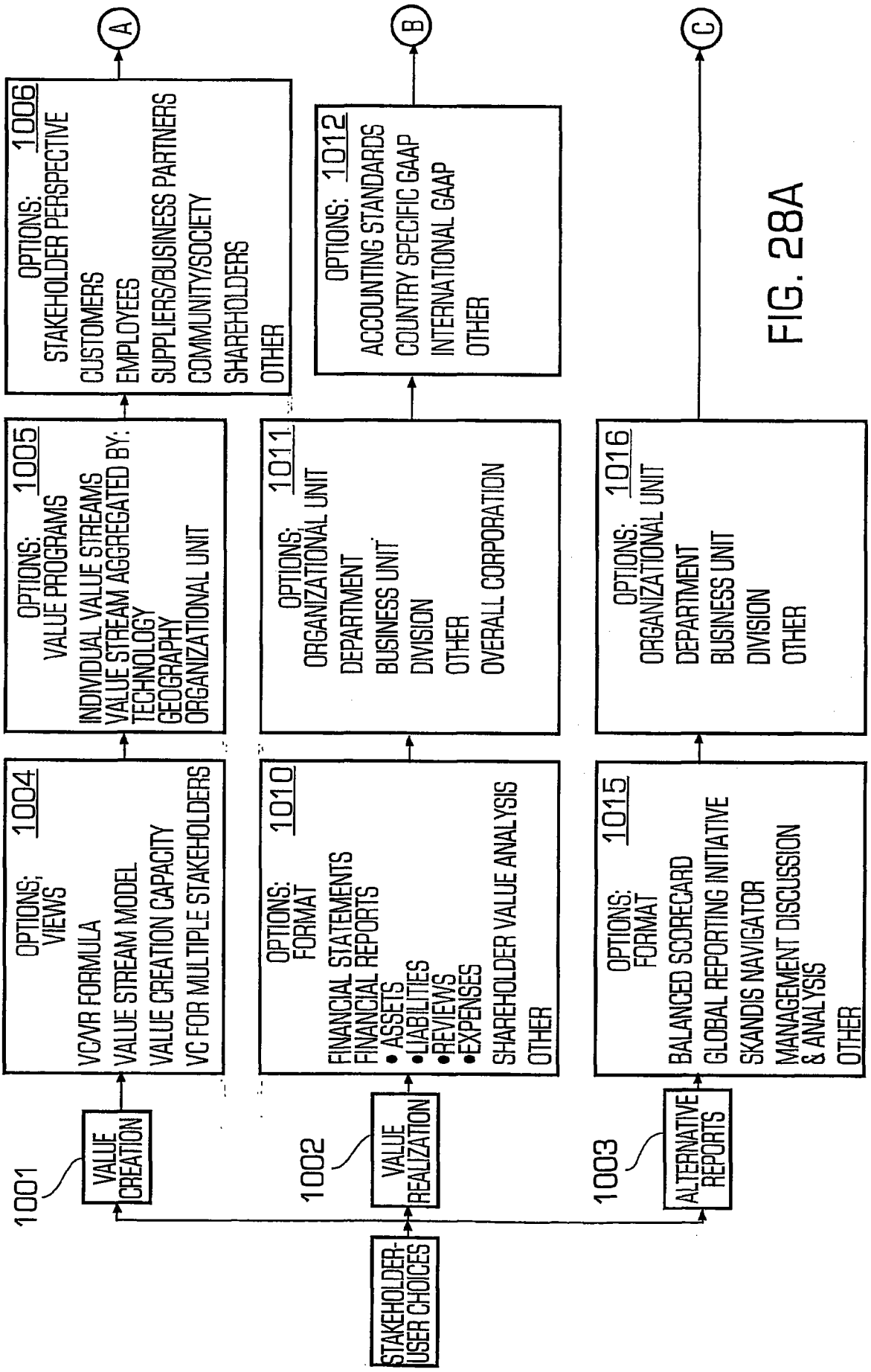

STAKEHOLDER-USER CHOICES
1001
VALUE CREATION
1002
VALUE REALIZATION
1003
ALTERNATIVE REPORTS
OPTIONS: VIEWS 1004
VC/VR FORMULA
VALUE STREAM MODEL
VALUE CREATION CAPACITY
VC FOR MULTIPLE STAKEHOLDERS
OPTIONS: FORMAT 1010
FINANCIAL STATEMENTS
FINANCIAL REPORTS
• ASSETS
• LIABILITIES
• REVIEWS
• EXPENSES
SHAREHOLDER VALUE ANALYSIS
OTHER
OPTIONS: FORMAT 1015
BALANCED SCORECARD
GLOBAL REPORTING INITIATIVE
SKANDIS NAVIGATOR
MANAGEMENT DISCUSSION & ANALYSIS
OTHER
OPTIONS: VALUE PROGRAMS 1005
INDIVIDUAL VALUE STREAMS
VALUE STREAM AGGREGATED BY:
TECHNOLOGY
GEOGRAPHY
ORGANIZATIONAL UNIT
OPTIONS: ORGANIZATIONAL UNIT 1011
DEPARTMENT
BUSINESS UNIT
DIVISION
OTHER
OVERALL CORPORATION
OPTIONS: ORGANIZATIONAL UNIT 1016
DEPARTMENT
BUSINESS UNIT
DIVISION
OTHER
OPTIONS: STAKEHOLDER PERSPECTIVE 1006
CUSTOMERS
EMPLOYEES
SUPPLIERS/BUSINESS PARTNERS
COMMUNITY/SOCIETY
SHAREHOLDERS
OTHER
OPTIONS: ACCOUNTING STANDARDS 1012
COUNTRY SPECIFIC GAAP
INTERNATIONAL GAAP
OTHER
A
B
C

FIG. 28A

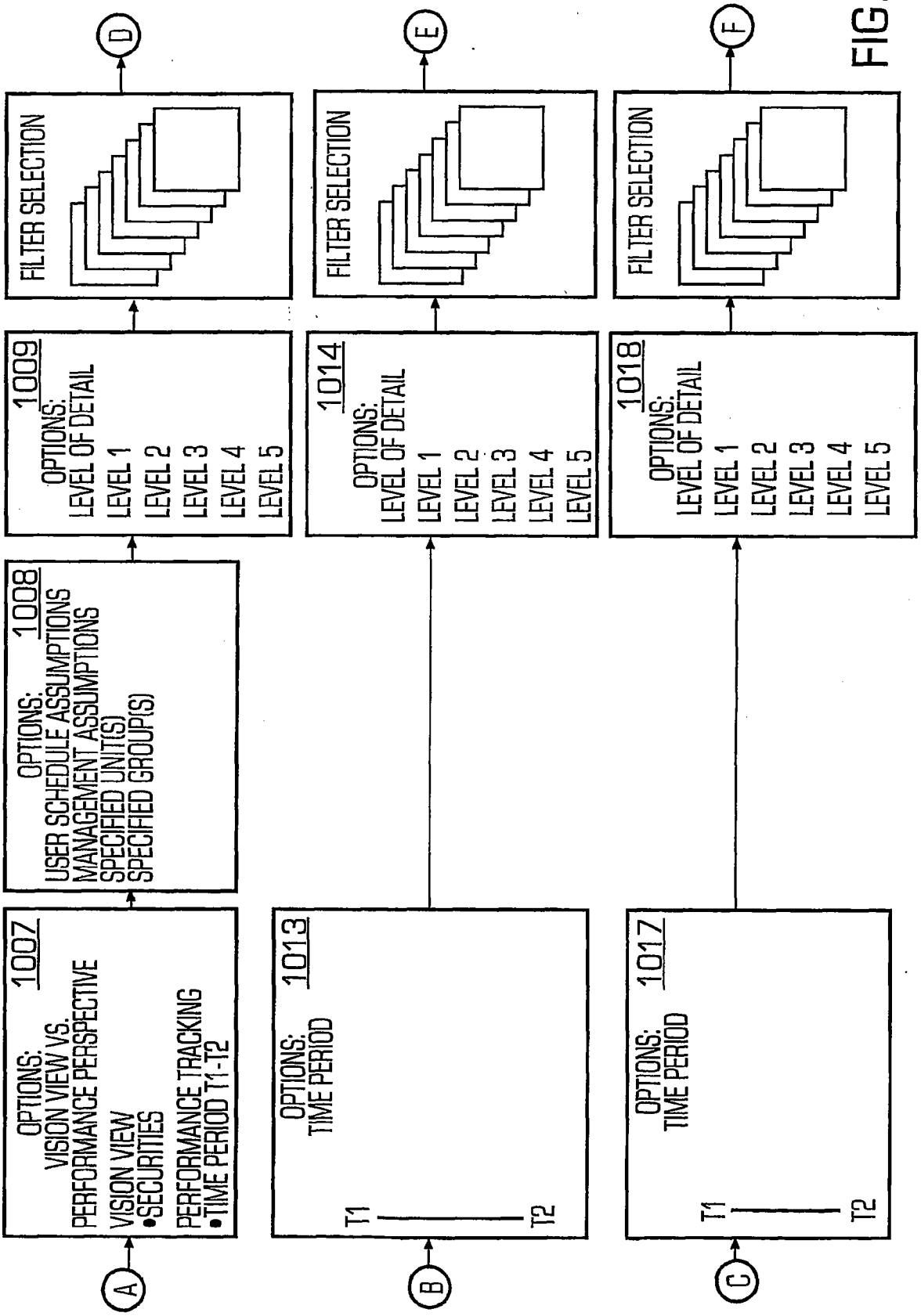

A
B
C
D
E
F
OPTIONS:
VISION VIEW V.S.
PERFORMANCE PERSPECTIVE
1007
VISION VIEW
•SECURITIES
PERFORMANCE TRACKING
•TIME PERIOD T1-T2
OPTIONS:
USER SCHEDULE ASSUMPTIONS
MANAGEMENT ASSUMPTIONS
SPECIFIED UNIT(S)
SPECIFIED GROUP(S)
1008
OPTIONS:
TIME PERIOD
1013
T1
T2
OPTIONS:
TIME PERIOD
1017
T1
T2
OPTIONS:
LEVEL OF DETAIL
1009
LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
OPTIONS:
LEVEL OF DETAIL
1014
LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
OPTIONS:
LEVEL OF DETAIL
1018
LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
LEVEL 5
FILTER SELECTION
FILTER SELECTION
FILTER SELECTION

FIG. 28B

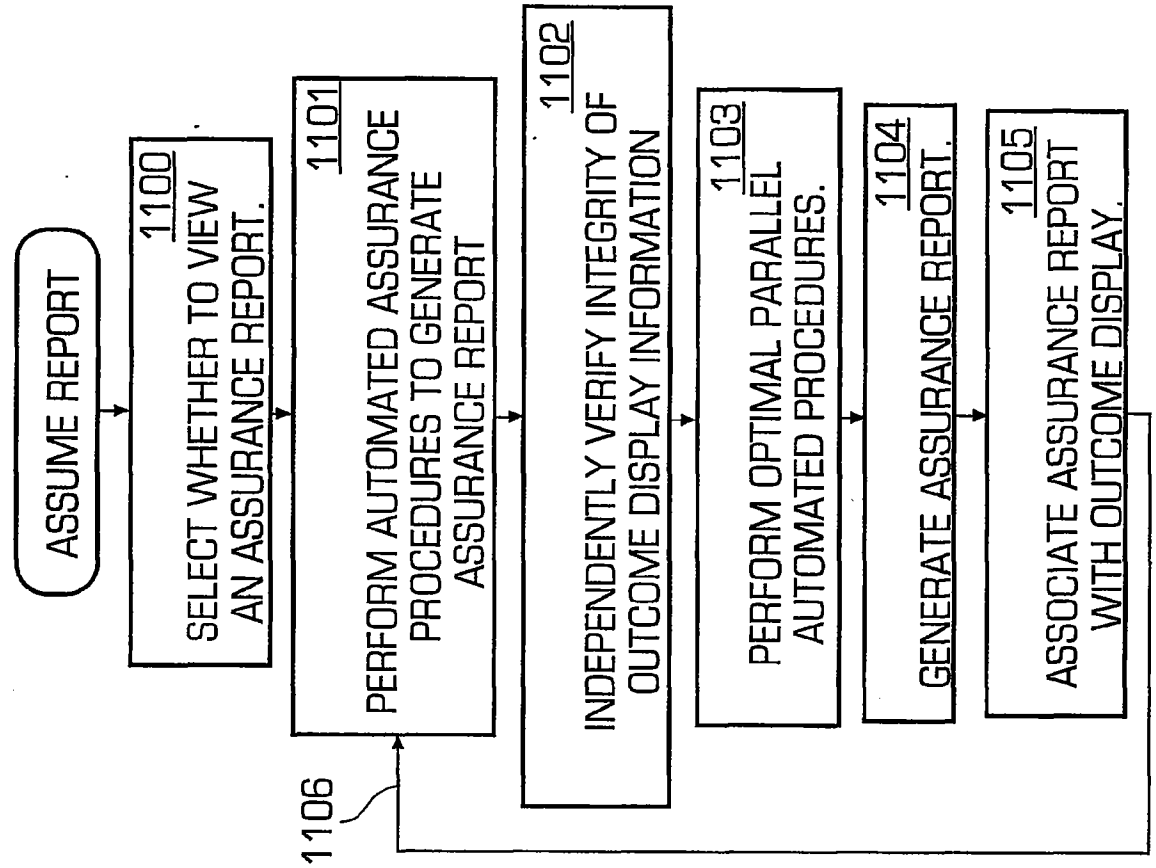


FIG. 29

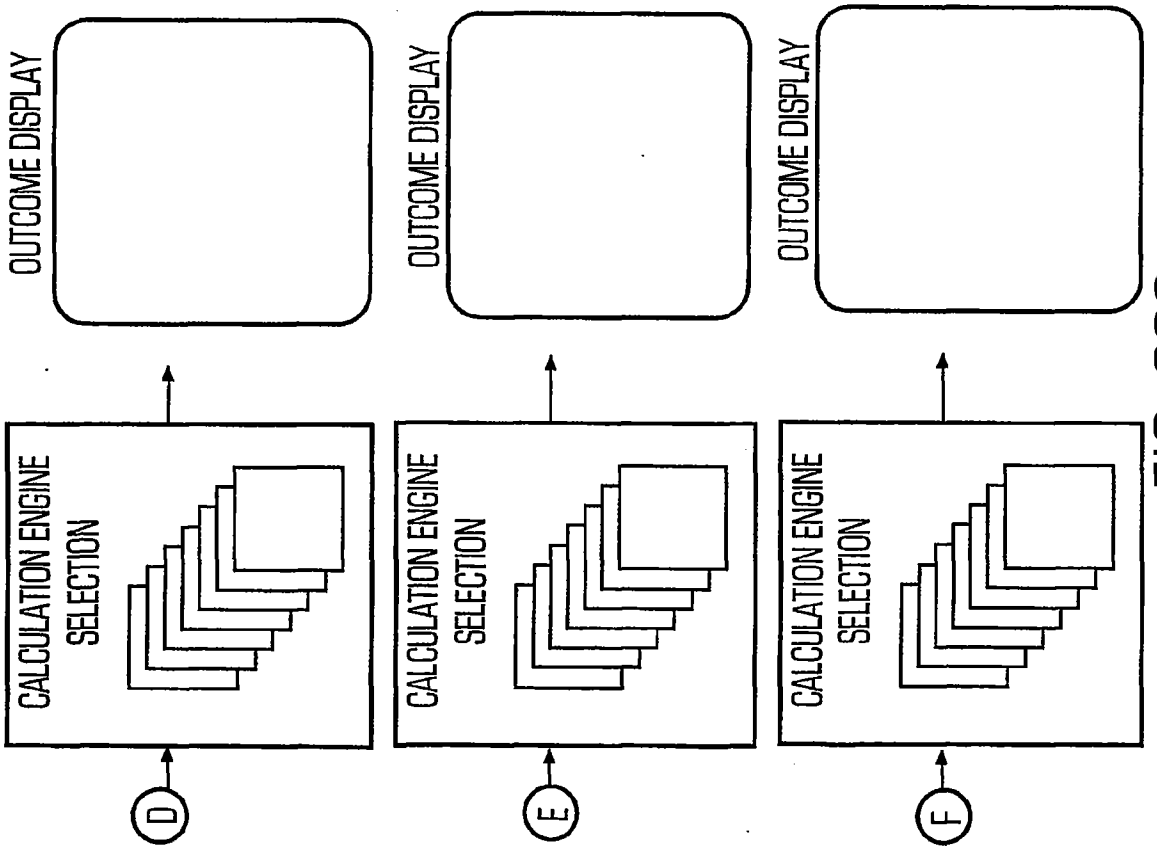


FIG. 28C

ASSURANCE PROCEDURES AND DECISION RULES: ILLUSTRATIVE EXAMPLE

FOR THE PURPOSE OF THIS ILLUSTRATIVE EXAMPLE, ASSUME THAT CHOICES MADE BY A USER IN SELECTING AN OUTCOME DISPLAY WERE AS FOLLOWS:

- VALUE CREATION MODE
- VALUE STREAM MODEL
- VALUE STREAM A
- SHAREHOLDER PERSPECTIVE
- PERFORMANCE TRACKING VIEW FOR THE PAST YEAR
- MANAGEMENT'S OFFICIAL ASSUMPTIONS
- LEVEL OF DETAIL: 5 (I.E. MAXIMUM DETAIL)
- ASSURANCE REPORT REQUESTED

ASSURANCE PROCEDURE DECISION RULES (FOR THIS EXAMPLE)	1200a **IF "YES"**	1200b **IF "NO"**
WAS AN ASSURANCE REQUESTED?	PROCEED TO CHECK THAT THE CORRECT CALCULATION ENGINE WAS USED FOR VALUE CREATION FROM A SHAREHOLDER PERSPECTIVE	TERMINATE ASSURANCE PROCEDURES
IS THE OUTCOME DISPLAY MATHEMATICALLY CORRECT?	PROCEED TO VERIFY THAT CALCULATION ENGINE HAS NOT BEEN ALTERED SINCE LAST VERIFIED	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
WAS THE CORRECT CALCULATION ENGINE USED?	PROCEED TO CHECK THAT THE CORRECT EVENT/ASSUMPTIONS FILTER WAS USED FOR VALUE CREATION FROM A SHAREHOLDER PERSPECTIVE	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
HAS THE CALCULATION ENGINE BEEN VERIFIED?	PROCEED TO VERIFY THAT THE EVENT/ASSUMPTIONS FILTER HAS NOT BEEN ALTERED SINCE LAST VERIFIED	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
WAS THE CORRECT EVENT/ASSUMPTION FILTER USED?	PROCEED TO TEST THE INTEGRITY OF THE EVENT/ASSUMPTIONS MATRIX	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
HAS THE EVENT/ASSUMPTIONS FILTER BEEN VERIFIED?	PROCEED TO VERIFY THAT ALL EVENTS USED IN THE CALCULATION FALL WITHIN THE SPECIFIED TIME PERIOD	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR

B B

FIG. 30A

A ↑ ---------- ↑ A

	IF "YES"	IF "NO"
ARE ALL EVENTS LINKED TO ASSUMPTIONS AND VICE VERSA?	PROCEED TO TEST THE CONSISTENCY OF ASSUMPTIONS	
DO ALL EVENTS FALL WITHIN THE SPECIFIED TIME PERIOD?	PROCEED TO TEST ASSUMPTION LIMITS	
ARE ALL ASSUMPTIONS WITHIN DEFINED LIMITS?	PROCEED TO TEST OUTCOME LIMITS	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
ARE OUTCOME CALCULATED WITHIN DEFINED LIMITS?	PROCEED TO VALIDATE OTHER DATA	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
DOES OUTCOME CALCULATED WITHIN DEFINED LIMITS?	PROCEED TO DETERMINE THE EXTENT OF	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
WERE MANUAL ASSURANCE PROCEDURES PERFORMED WITHIN THE PAST YEAR?	PROCEED TO OBTAIN RESULTS OF PREVIOUSLY PERFORMED MANUAL ASSURANCE PROCEDURES	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
DID RESULTS OF MANUAL ASSURANCE PROCEDURES FALL WITHIN ACCEPTABLE PARAMETERS?	PROCEED TO CHECK CORRECT APPLICATION OF APPLICABLE STANDARDS	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
DOES THE OUTCOME DISPLAY COMPLY WITH APPLICABLE STANDARDS SET BY AUTHORITATIVE B	PROCEED TO GENERATE ASSURANCE REPORT	TERMINATE ASSURANCE PROCEDURES AND REPORT ERROR
	1200a	1200b

FIG. 30B

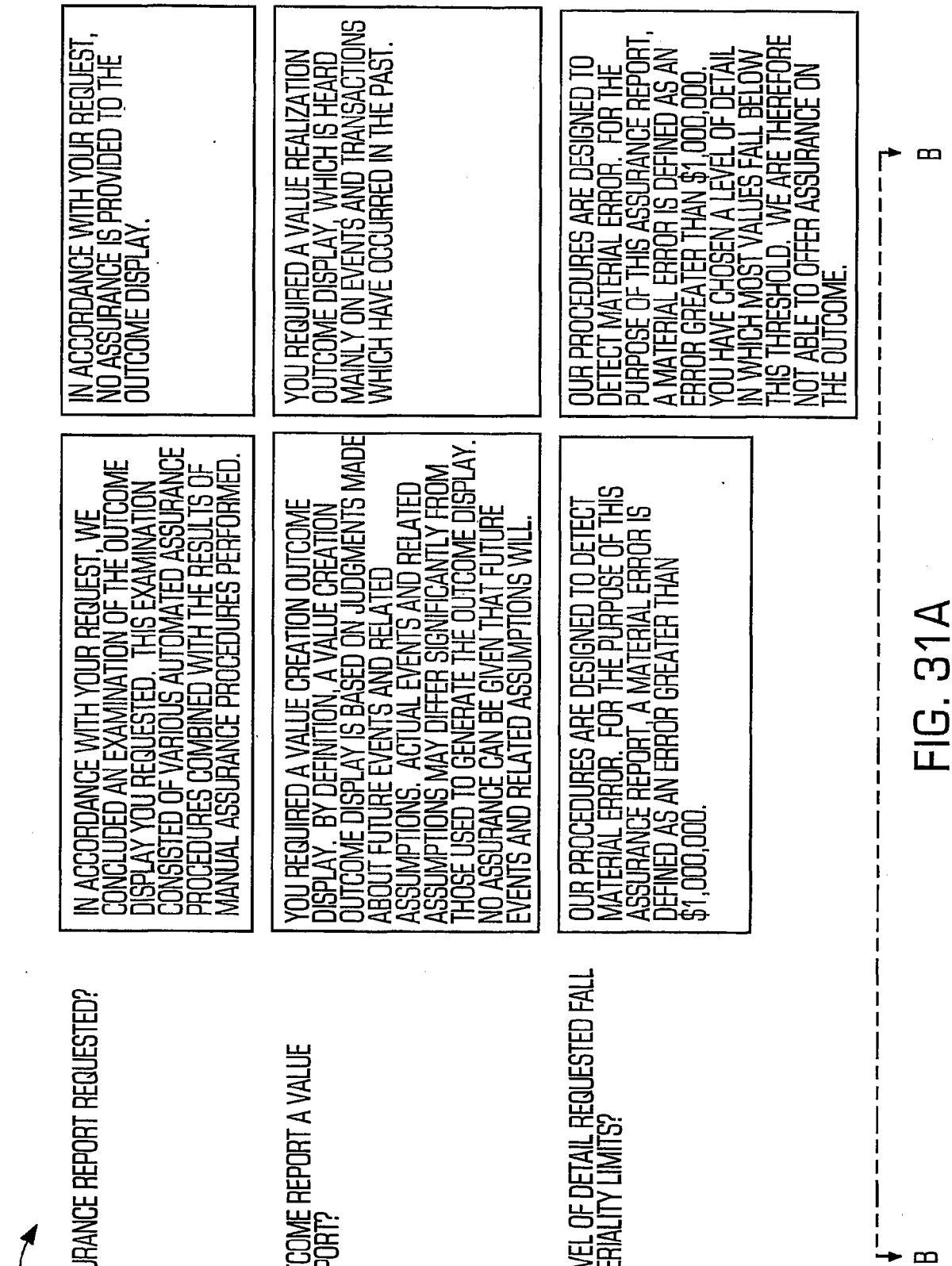

1202
WAS AN ASSURANCE REPORT REQUESTED?
WAS THE OUTCOME REPORT A VALUE CREATION REPORT?
DOES THE LEVEL OF DETAIL REQUESTED FALL WITHIN MATERIALITY LIMITS?
IN ACCORDANCE WITH YOUR REQUEST, WE CONCLUDED AN EXAMINATION OF THE OUTCOME DISPLAY YOU REQUESTED. THIS EXAMINATION CONSISTED OF VARIOUS AUTOMATED ASSURANCE PROCEDURES COMBINED WITH THE RESULTS OF MANUAL ASSURANCE PROCEDURES PERFORMED.
YOU REQUIRED A VALUE CREATION OUTCOME DISPLAY. BY DEFINITION, A VALUE CREATION OUTCOME DISPLAY IS BASED ON JUDGMENTS MADE ABOUT FUTURE EVENTS AND RELATED ASSUMPTIONS. ACTUAL EVENTS AND RELATED ASSUMPTIONS MAY DIFFER SIGNIFICANTLY FROM THOSE USED TO GENERATE THE OUTCOME DISPLAY. NO ASSURANCE CAN BE GIVEN THAT FUTURE EVENTS AND RELATED ASSUMPTIONS WILL.
OUR PROCEDURES ARE DESIGNED TO DETECT MATERIAL ERROR. FOR THE PURPOSE OF THIS ASSURANCE REPORT, A MATERIAL ERROR IS DEFINED AS AN ERROR GREATER THAN $1,000,000.
IN ACCORDANCE WITH YOUR REQUEST, NO ASSURANCE IS PROVIDED TO THE OUTCOME DISPLAY.
YOU REQUIRED A VALUE REALIZATION OUTCOME DISPLAY, WHICH IS HEARD MAINLY ON EVENTS AND TRANSACTIONS WHICH HAVE OCCURRED IN THE PAST.
OUR PROCEDURES ARE DESIGNED TO DETECT MATERIAL ERROR. FOR THE PURPOSE OF THIS ASSURANCE REPORT, A MATERIAL ERROR IS DEFINED AS AN ERROR GREATER THAN $1,000,000. YOU HAVE CHOSEN A LEVEL OF DETAIL IN WHICH MOST VALUES FALL BELOW THIS THRESHOLD. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE ON THE OUTCOME.
B
B

FIG. 31A

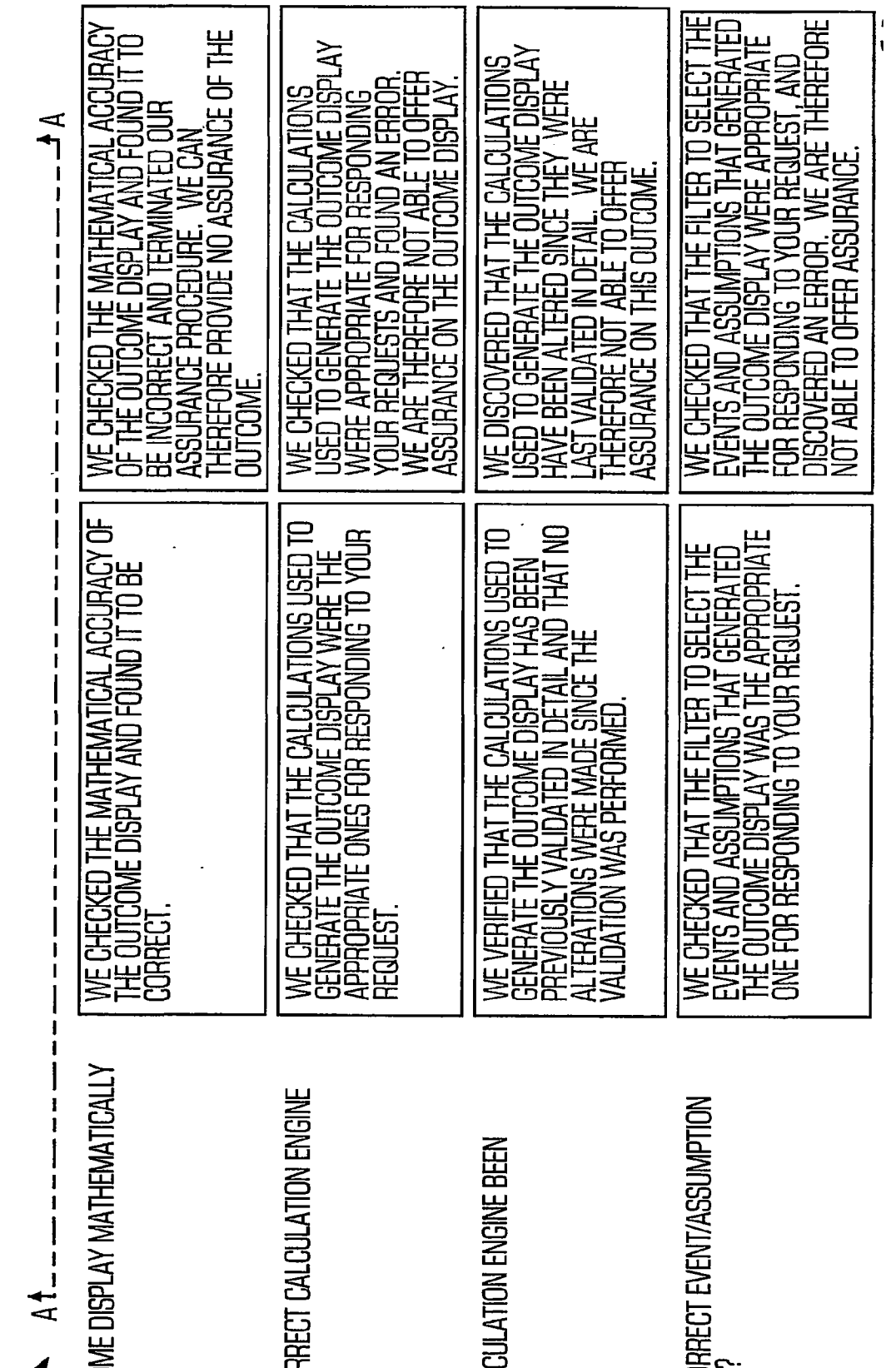

1202
A
A
IS THE OUTCOME DISPLAY MATHEMATICALLY CORRECT?
WE CHECKED THE MATHEMATICAL ACCURACY OF THE OUTCOME DISPLAY AND FOUND IT TO BE CORRECT.
WE CHECKED THE MATHEMATICAL ACCURACY OF THE OUTCOME DISPLAY AND FOUND IT TO BE INCORRECT AND TERMINATED OUR ASSURANCE PROCEDURE. WE CAN THEREFORE PROVIDE NO ASSURANCE OF THE OUTCOME.
WAS THE CORRECT CALCULATION ENGINE USED?
WE CHECKED THAT THE CALCULATIONS USED TO GENERATE THE OUTCOME DISPLAY WERE THE APPROPRIATE ONES FOR RESPONDING TO YOUR REQUEST.
WE CHECKED THAT THE CALCULATIONS USED TO GENERATE THE OUTCOME DISPLAY WERE APPROPRIATE FOR RESPONDING YOUR REQUESTS AND FOUND AN ERROR. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE ON THE OUTCOME DISPLAY.
HAS THE CALCULATION ENGINE BEEN VERIFIED?
WE VERIFIED THAT THE CALCULATIONS USED TO GENERATE THE OUTCOME DISPLAY HAS BEEN PREVIOUSLY VALIDATED IN DETAIL AND THAT NO ALTERATIONS WERE MADE SINCE THE VALIDATION WAS PERFORMED.
WE DISCOVERED THAT THE CALCULATIONS USED TO GENERATE THE OUTCOME DISPLAY HAVE BEEN ALTERED SINCE THEY WERE LAST VALIDATED IN DETAIL. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE ON THIS OUTCOME.
WAS THE CORRECT EVENT/ASSUMPTION FILTER USED?
WE CHECKED THAT THE FILTER TO SELECT THE EVENTS AND ASSUMPTIONS THAT GENERATED THE OUTCOME DISPLAY WAS THE APPROPRIATE ONE FOR RESPONDING TO YOUR REQUEST.
WE CHECKED THAT THE FILTER TO SELECT THE EVENTS AND ASSUMPTIONS THAT GENERATED THE OUTCOME DISPLAY WERE APPROPRIATE FOR RESPONDING TO YOUR REQUEST, AND DISCOVERED AN ERROR. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE.
C
C

FIG. 31B

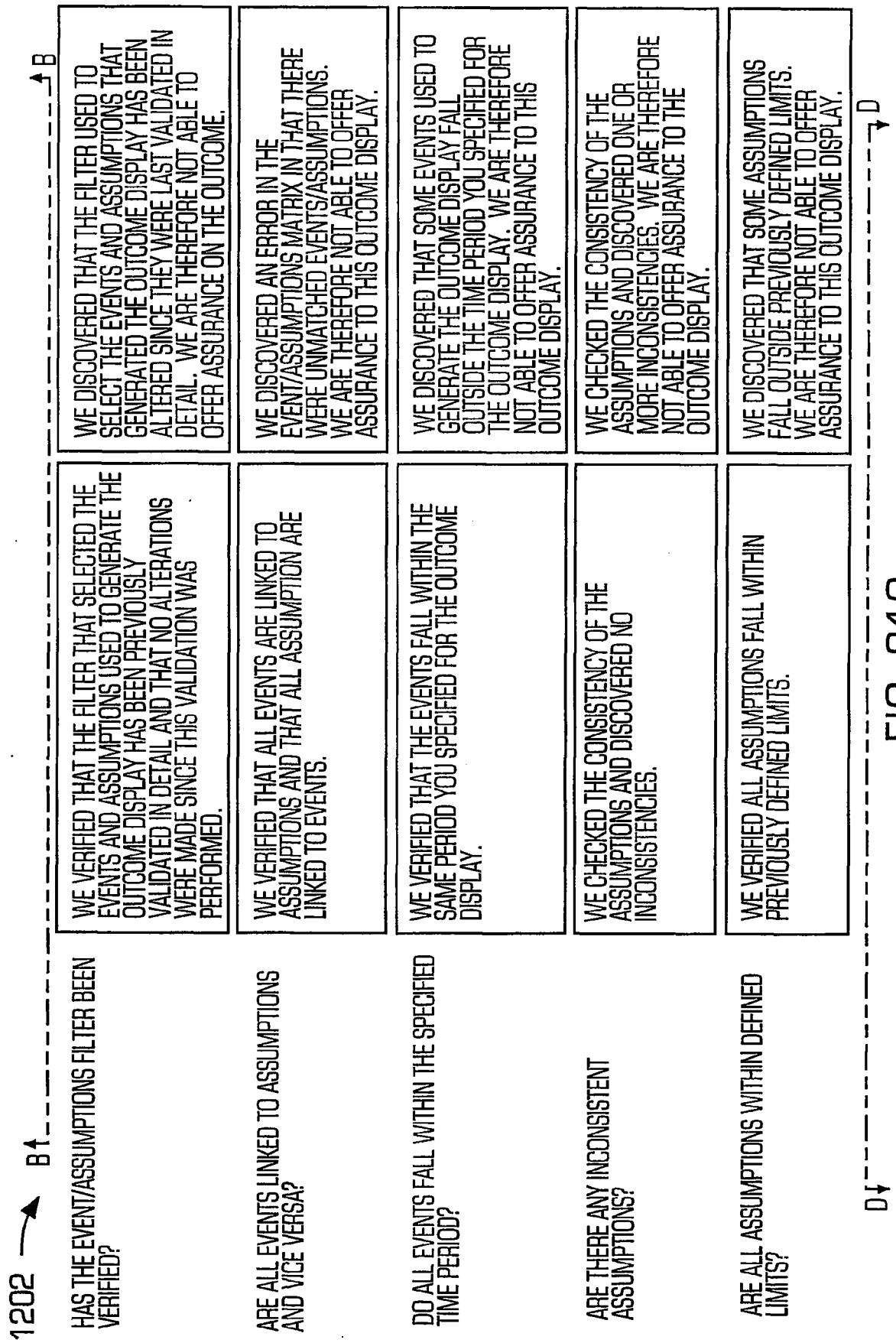

1202
B
B
HAS THE EVENT/ASSUMPTIONS FILTER BEEN VERIFIED?
WE VERIFIED THAT THE FILTER THAT SELECTED THE EVENTS AND ASSUMPTIONS USED TO GENERATE THE OUTCOME DISPLAY HAS BEEN PREVIOUSLY VALIDATED IN DETAIL AND THAT NO ALTERATIONS WERE MADE SINCE THIS VALIDATION WAS PERFORMED.
WE DISCOVERED THAT THE FILTER USED TO SELECT THE EVENTS AND ASSUMPTIONS THAT GENERATED THE OUTCOME DISPLAY HAS BEEN ALTERED SINCE THEY WERE LAST VALIDATED IN DETAIL. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE ON THE OUTCOME.
ARE ALL EVENTS LINKED TO ASSUMPTIONS AND VICE VERSA?
WE VERIFIED THAT ALL EVENTS ARE LINKED TO ASSUMPTIONS AND THAT ALL ASSUMPTION ARE LINKED TO EVENTS.
WE DISCOVERED AN ERROR IN THE EVENT/ASSUMPTIONS MATRIX IN THAT THERE WERE UNMATCHED EVENTS/ASSUMPTIONS. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE TO THIS OUTCOME DISPLAY.
DO ALL EVENTS FALL WITHIN THE SPECIFIED TIME PERIOD?
WE VERIFIED THAT THE EVENTS FALL WITHIN THE SAME PERIOD YOU SPECIFIED FOR THE OUTCOME DISPLAY.
WE DISCOVERED THAT SOME EVENTS USED TO GENERATE THE OUTCOME DISPLAY FALL OUTSIDE THE TIME PERIOD YOU SPECIFIED FOR THE OUTCOME DISPLAY. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE TO THIS OUTCOME DISPLAY.
ARE THERE ANY INCONSISTENT ASSUMPTIONS?
WE CHECKED THE CONSISTENCY OF THE ASSUMPTIONS AND DISCOVERED NO INCONSISTENCIES.
WE CHECKED THE CONSISTENCY OF THE ASSUMPTIONS AND DISCOVERED ONE OR MORE INCONSISTENCIES. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE TO THE OUTCOME DISPLAY.
ARE ALL ASSUMPTIONS WITHIN DEFINED LIMITS?
WE VERIFIED ALL ASSUMPTIONS FALL WITHIN PREVIOUSLY DEFINED LIMITS.
WE DISCOVERED THAT SOME ASSUMPTIONS FALL OUTSIDE PREVIOUSLY DEFINED LIMITS. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE TO THIS OUTCOME DISPLAY.
D
D

FIG. 31C

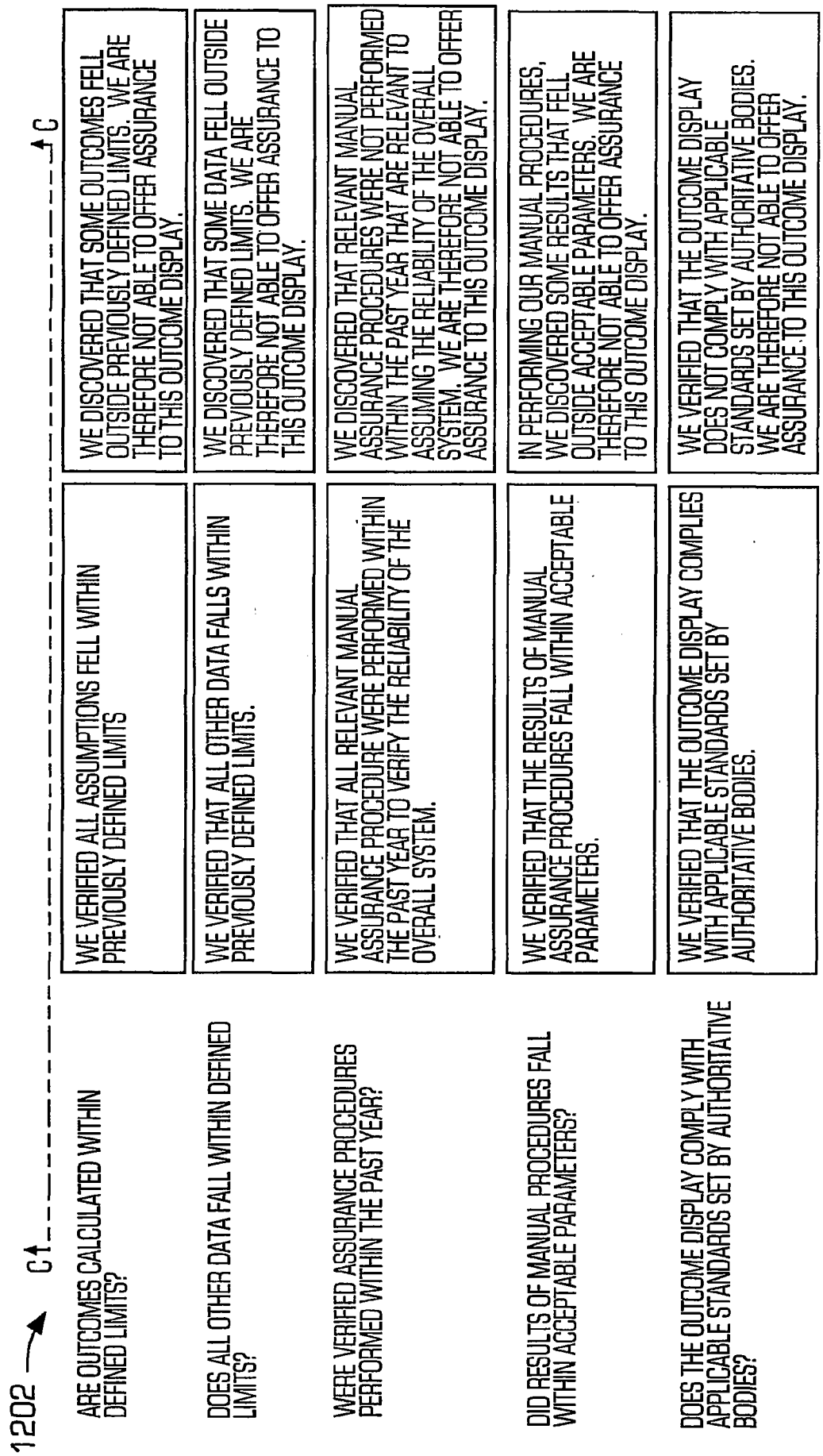

1202
C1
C
ARE OUTCOMES CALCULATED WITHIN DEFINED LIMITS?
WE VERIFIED ALL ASSUMPTIONS FELL WITHIN PREVIOUSLY DEFINED LIMITS
WE DISCOVERED THAT SOME OUTCOMES FELL OUTSIDE PREVIOUSLY DEFINED LIMITS. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE TO THIS OUTCOME DISPLAY.
DOES ALL OTHER DATA FALL WITHIN DEFINED LIMITS?
WE VERIFIED THAT ALL OTHER DATA FALLS WITHIN PREVIOUSLY DEFINED LIMITS.
WE DISCOVERED THAT SOME DATA FELL OUTSIDE PREVIOUSLY DEFINED LIMITS. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE TO THIS OUTCOME DISPLAY.
WERE VERIFIED ASSURANCE PROCEDURES PERFORMED WITHIN THE PAST YEAR?
WE VERIFIED THAT ALL RELEVANT MANUAL ASSURANCE PROCEDURE WERE PERFORMED WITHIN THE PAST YEAR TO VERIFY THE RELIABILITY OF THE OVERALL SYSTEM.
WE DISCOVERED THAT RELEVANT MANUAL ASSURANCE PROCEDURES WERE NOT PERFORMED WITHIN THE PAST YEAR THAT ARE RELEVANT TO ASSUMING THE RELIABILITY OF THE OVERALL SYSTEM. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE TO THIS OUTCOME DISPLAY.
DID RESULTS OF MANUAL PROCEDURES FALL WITHIN ACCEPTABLE PARAMETERS?
WE VERIFIED THAT THE RESULTS OF MANUAL ASSURANCE PROCEDURES FALL WITHIN ACCEPTABLE PARAMETERS.
IN PERFORMING OUR MANUAL PROCEDURES, WE DISCOVERED SOME RESULTS THAT FELL OUTSIDE ACCEPTABLE PARAMETERS. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE TO THIS OUTCOME DISPLAY.
DOES THE OUTCOME DISPLAY COMPLY WITH APPLICABLE STANDARDS SET BY AUTHORITATIVE BODIES?
WE VERIFIED THAT THE OUTCOME DISPLAY COMPLIES WITH APPLICABLE STANDARDS SET BY AUTHORITATIVE BODIES.
WE VERIFIED THAT THE OUTCOME DISPLAY DOES NOT COMPLY WITH APPLICABLE STANDARDS SET BY AUTHORITATIVE BODIES. WE ARE THEREFORE NOT ABLE TO OFFER ASSURANCE TO THIS OUTCOME DISPLAY.

FIG. 31D

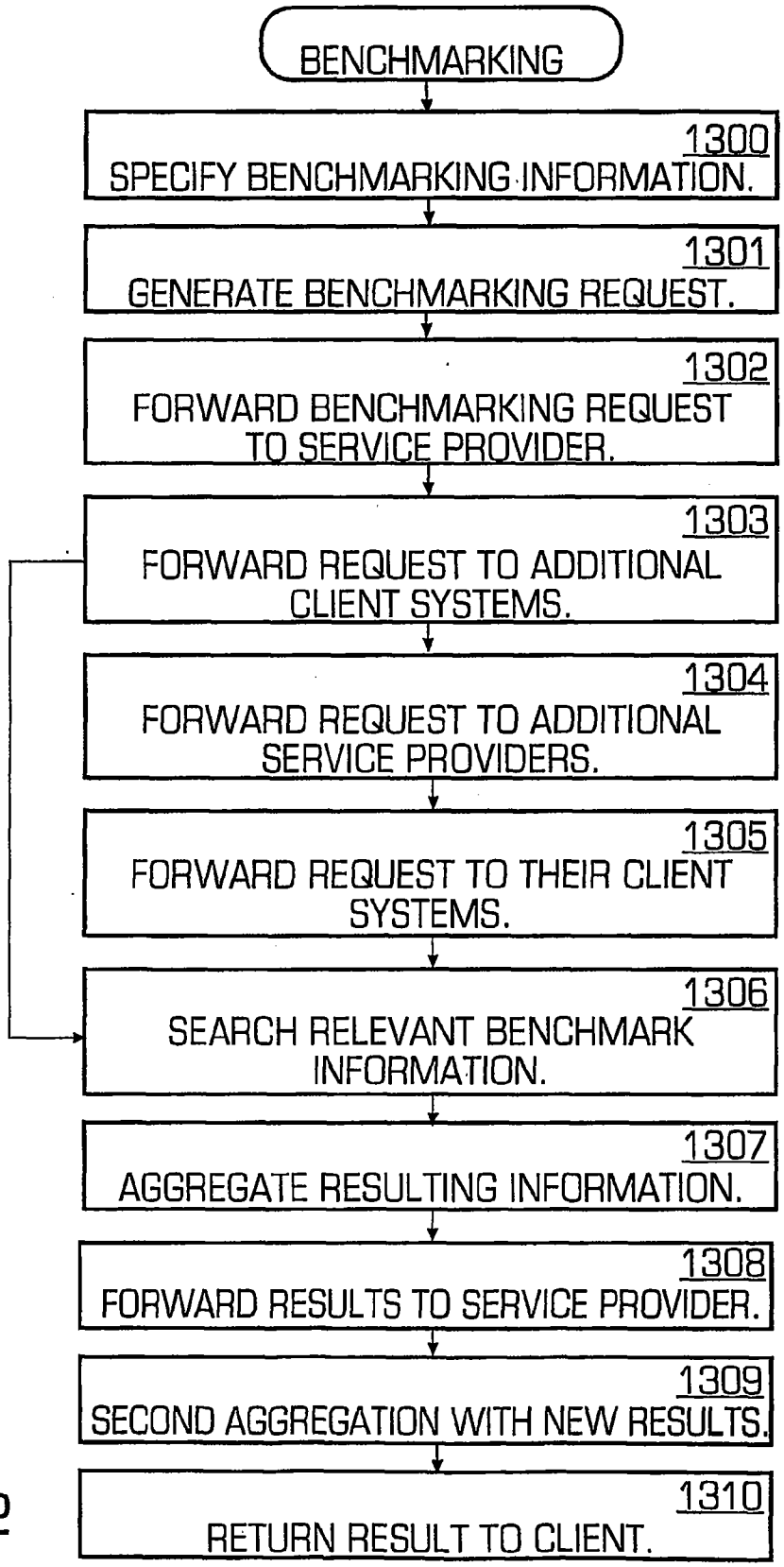

BENCHMARKING
1300
SPECIFY BENCHMARKING INFORMATION.
1301
GENERATE BENCHMARKING REQUEST.
1302
FORWARD BENCHMARKING REQUEST TO SERVICE PROVIDER.
1303
FORWARD REQUEST TO ADDITIONAL CLIENT SYSTEMS.
1304
FORWARD REQUEST TO ADDITIONAL SERVICE PROVIDERS.
1305
FORWARD REQUEST TO THEIR CLIENT SYSTEMS.
1306
SEARCH RELEVANT BENCHMARK INFORMATION.
1307
AGGREGATE RESULTING INFORMATION.
1308
FORWARD RESULTS TO SERVICE PROVIDER.
1309
SECOND AGGREGATION WITH NEW RESULTS.
1310
RETURN RESULT TO CLIENT.

FIG. 32